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COCA.*

THE GENUS ERYTHROXYLON.

THE family of *Erythroxyleæ* was established by Kunth, in 1824.† The genus Erythroxylon‡ was first described by Patrick Brown, in 1756, under the individual *Erythroxylon areolatum.*§

The members of this family are shrubs or trees which have, among other characteristics, that of possessing a reddish wood (whence the name).

The species of the genus Erythroxylon have been differently grouped in classes by different authors.

De Candolle distinguishes two classes, according to the characters of the leaves, viz., Penninervia and Areolata, the latter of which are distinguished by two lateral ribs, running almost parallel to the main-rib and running in a curve over the secondary ribs. Martius divides them into two sections, according to distinctions in the flowers. Peyritsch (in Martius, *Flora Brasil.*) adopts in the main the classification of Martius, but superadds the characteristics of the leaves as decisive motives.

So far as the existing literature shows, only a few species are used medicinally or in the arts.

The very dense wood, as well as the bark of several species, which yields a reddish-brown dye-stuff soluble in water, are employed for technical purposes. The leaves, buds, bark of the trunk and root, and the scarlet fruits have been used in medicine.

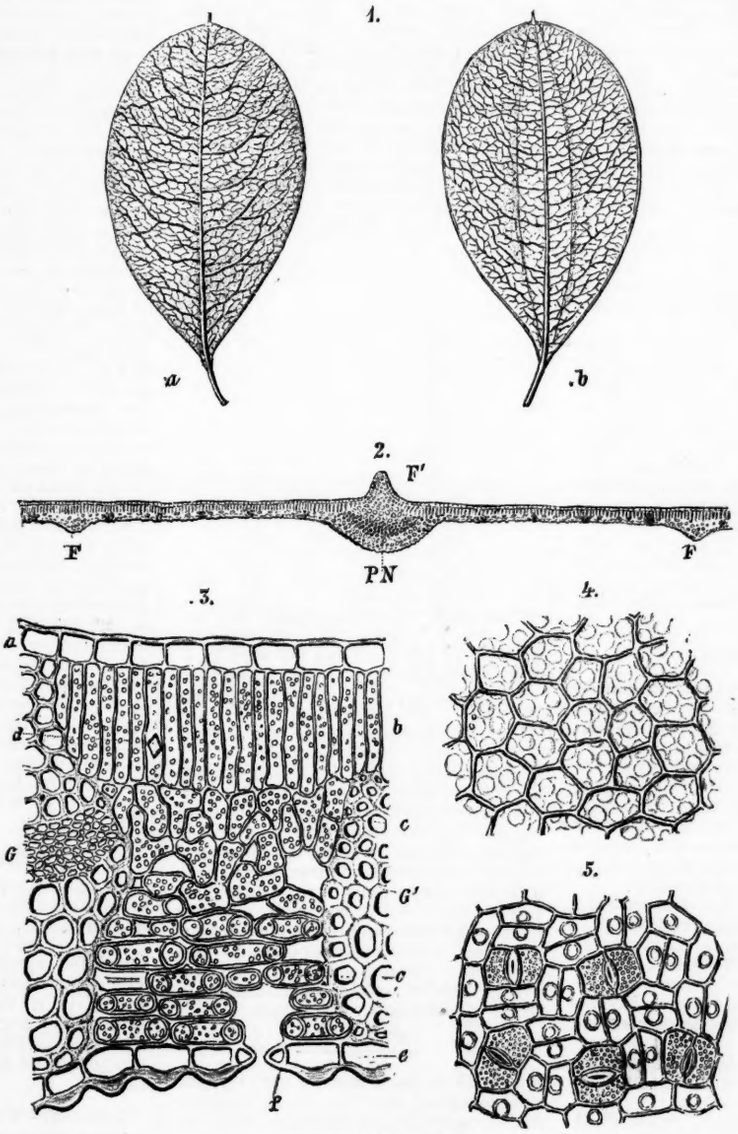
ERYTHROXYLON COCA, Lam.

This species of Coca, particularly interesting at the present time, has been called by a variety of names, of which the following list given by the author is believed to be as complete as it can be obtained at present:

Spanish: Coca.
Peruvian: Cuca.
Guarigian: Hayo.
Brazilian (native): Ypadú.

Other names, given by European authors are: Coca Peruvianorum (Johnston); Coca Peruina (Hernandez); Coca occidentalis (Fragoso); Coca herba (Benzon); Hierva Cuca (Ortega); Myrto similis Indica (Bauhin); Erythroxylum Peruvianorum (Prescott); Erythroxylum peruano con hojas ovales y drupas de seis angulos (Unanué); Peruvian Tobacco (Calkins).

[The botanical description of the tree and its organs is omitted by the author and also by us. We have transposed our abstract of the chapter on the pharmacognosy to this place.—ED. AM. DRUGG.]



Structure of Coca Leaves.

FIG 1. Coca Leaves. *a*, Upper surface. *b*, Lower surface with the two characteristic folds.
FIG. 2. Cross-Section, enlarged 20 diameters. *F*, folds. *F'*, fold over the median rib.
FIG. 3. Vertical Section of the Leaf, enlarged. *a*, Epidermis of Upper Surface. *b*, Palisade Parenchyma. *c*, Cortical Parenchyma. *d*. Crystals of Calcium Oxalate. *e*. Epidermis of Lower Surface *f*, Stoma. *G*, Larger Vascular Bundle. *G'*, Smaller Vascular Bundle.
FIG. 4. Horizontal View of Epidermis of Upper Surface.
FIG. 5. Horizontal View of Epidermis of Lower Surface.

PHARMACOGNOSY.

Commercial coca leaves are oblongly ovate or obovate, 3 to 8 Cm. (2¼ to 3⅛ inch) long, 2 to 4½ Cm. (¾ to 1¾ inch) broad, and have a thin stalk, about 4 to 5 Cm. (1½ to 2 inch.) in length. They are pointed at both ends, or only at the base, at the apex rounded off, blunt or slightly indented, and always provided with a small, short, projecting point, which is often found broken off; margin entire, quite thin, revolute, stiff and brittle. The upper surface is olive-colored, the under surface is yellowish or grayish-green; both sides are dull, glabrous, and covered with a very thin waxy coating.

Upon the lower surface, the main rib appears very strong and prominent, running to the apex of the leaf. From this main rib arise, almost at right angles, more or less prominent secondary ribs, which appear, however, more prominent on the upper surface than upon the lower. The less prominent secondary ribs resolve themselves, immediately beyond their point of origin, into numerous, fine, polygonal, anastomosing meshes; but the stronger ones run in a curve to about the middle or outer third of the lamina, and then fork out in such a way that the upper branches of the lower ribs combine with the lower branches of the next higher ones. Further ramification takes place inside of these spaces, so that the leaf, when viewed by transmitted light, appears to be divided into innumerable, very small, polygonal fields.

The lower surface of by far the largest majority of the leaves exhibits a very characteristic feature. At either side of the mid-rib, there extends from the base to the apex, in a flattened curve, distant at its furthest point from the main rib only 1½ to 2 Mm., a fine line, which, on first appearance, looks like a tender lateral rib, but, on closer examination, is found to run

* Abstract of selected chapters of a pamphlet entitled: Das Cocablatt. Eine pharmakognostische Abhandlug von Dr. Josef Nevinny, Assistent an der Lehrkanzel für Pharmakologie und Pharmakognosie an der K. K. Universität in Wien. 8vo. Wien, 1886. (With plates.) (With the sanction of the author.)

† *Kunth, Nova genera et species plantarum.* V. According to him, the family comprises the two genera Erythroxylon and Sethia, which are frequently combined in one genus.

‡ This has also been classed among the Malpighiaceæ (Lindley), Malpighineæ (Martius) and Lineæ (Bentham and Hooker).

§ Regarding the botanical characters of the genus, the following authorities may be consulted: v. Martius, Beträge zur Kenntniss der Pflanzengattung Erythroxilon in *Abh. d. K. Bayr. Akad. d. Wiss.*, III. (München, 1843), pp. 281, 410. Also the Erythroxylaceæ by Joh. Peyritsch, in *Flora Brasil.*, fasc. 81 pp. 125-180.

continuously along the surface over the deeper situated cross-ribs.

According to P. Brown, Martius, and other observers, these lines or stripes are simply folds caused by the pressure brought by the edges of the leaves (while rolled in the bud) against the nerves.

Fig. 2 shows the characteristic folds, as well as the anatomical structure of the leaf in cross-section, under a magnifying power of 20 diameters.

The epidermis of the upper surface, viewed in horizontal section (Fig. 4), consists of irregularly polygonal, colorless cells, which are nearly rectangular in cross-section (Fig 3, *a*). Below these cells are seen the circular outlines of the palisade-cells (Fig. 3, *b*). The epidermis of the lower surface (Fig. 5), viewed horizontally, likewise presents irregularly polygonal, but more narrow cells, with the outline of a double-walled circle either occupying the middle of the cell or adhering to one side of the cell-wall. These circles are nothing more than a papillous projection of the strong walls of the cells seen in Fig. 3, *e*, which otherwise much resemble the epidermis cells of the upper surface. The very numerous stomata (Fig. 3, *f*, see also Fig. 5) are arranged in groups, very small, situated at the same level as the epidermis-cells, and communicate with a roomy air-space.

The palisade parenchyma (Fig. 3, *b*) contains much chlorophyll, a variety of tannic acid coloring ferrous salt green, and occasionally some crystals of calcium oxalate (Fig. 3, *d*).

Next follows the cortical parenchyma (Fig. 3, *c*), composed of irregularly combined cells, containing a much smaller quantity of chlorophyll, and now and then some crystals of oxalate of calcium, with a very small quantity of tannin. Only in very young, fresh leaves could minute drops of a yellow ethereal oil be noticed.

[The minute anatomy, very carefully given by the author, does not present any very remarkable features, and is therefore omitted here. — Ed. Am. Drugg.]

POSSIBLE SUBSTITUTIONS.

Though no proof can at present be adduced that any of the following have actually been used as fraudulent substitutes for the genuine coca leaf, yet the author thinks it not impossible that such an attempt might be made some time or other, and therefore enumerates certain other species of Erythroxylon, the leaves of which are more or less similar to those of the genuine coca. Such species are:

1. *E. lineolatum* D. C. Leaves elliptical, lower surface sea-green.
2. *E. areolatum* Jacq. Leaves obovate, or oblongly obovate, emarginate at the apex.
3. *E. cataractorum* Spr. Leaves elliptical, pointed at the base, rounded at the apex.
4. *E. panamense* Turcz. Leaves lanceolate or oblongly-lanceolate, narrowed at both ends.

The leaves of *E. mexicanum* H. B. K., *E. rigidulum* D. C., and *E. cassinoides* Pl. et Z. show the same lateral lines as the true coca and the preceding leaves, but are distinguished by their more or less leathery condition.

E. Mamacuca Mart. has thin, elliptical and pointed leaves, 2½ to 9 inches long. Those of *E. microphyllum* St. Hil. are only 2–3 Cm. (¾–1¼ inch) long, coriaceous, oval, and slightly contracted at the base.

None of the preceding have so far been chemically examined. It remains to be seen whether any of them will turn out to contain cocaine.

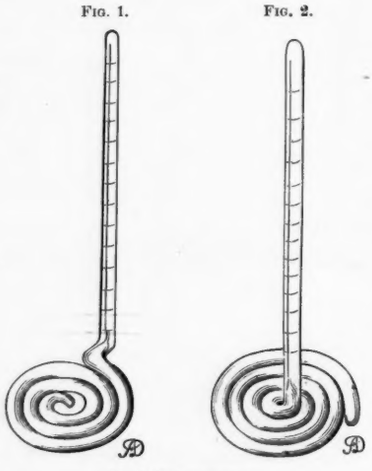
[To be continued.]

[Note.– In our last number, the word Coca has been misspelled, in the title, "Cocoa." This is, of course, the printer's blunder, and not ours.—Ed. Am. Dr.]

The Specific Gravity of Commercial Glycerin.

From a paper on the "Examination of Commercial Glycerin," by H. L. Sulman and E. E. Berry, in *The Analyst* (January, 1886), we abstract the following regarding the specific gravity of glycerin:

The specific gravity of glycerin appears to be a subject upon which some amount of doubt exists, the values assigned to it by different authorities differing considerably. It is usually assumed to be 1.260, but this figure is undoubtedly too low, more trustworthy determinations placing it nearer 1.270. Champion and Pellet give it at 1.264 at 15° C.; Vogel, Fuchs as 1.266 (the value adopted by Allen in his "Commercial Organic Analysis"); Fabian places it at 1.261 at 17.5°, which, assuming the coefficient of expansion of glycerin to be 0.0006, gives 1.263 at 15° C.; Chevreul, Schweikert, assign 1.267; and Lenz, at 13° C., the figure 1.2691 (adopted by Roscoe and Schorlemmer), which would be 1.2675 at 15° C., and it is this figure, confirming, as it does, the independent determinations of Chevreul and Schweikert, which we prefer to take; and experience having shown that it is quite possible to obtain twice distilled glycerin in a high degree of purity, with a density of 1.267 and



Rice's thermometer.

slightly over, Lenz is, as far as we have been able to ascertain, the only authority who has controlled his final results by combustion. The lower values obtained by other chemists are readily explained by the very great difficulty experienced in driving off the last one or two per cent of water from otherwise pure glycerin without effecting slight decomposition, and producing colored products. Substituting the above chosen value in Vogel's well-known formula:

$$\frac{1267.5-1000\ D}{2.675\ D}$$

where D is the observed gravity, the percentage of glycerin in aqueous solution may be ascertained with approximate accuracy.

The specific gravity of commercial samples does not necessarily indicate whether the glycerin is crude or distilled, although, as a rule, the former article, often heavily charged with salts, albuminous and other organic matter, is considerably higher in gravity than the distilled. The crude glycerin from soap leys may be boiled down to 1.300, 1.320, and even to 1.360, but the glycerin from candle factories, obtained by the lime saponification, or by the sulphuric acid process, is always lower than this. Commercial distilled glycerin is rarely met with above 1.261. It may be worth mentioning that the graviy of glycerin as shown by the hydrometer is generally two or three degrees too high.

[Original Communication.]

A NEW FORM OF THERMOMETER.

BY CHARLES RICE.

Some years ago, while making a series of experiments involving the taking of the temperature of a small volume of liquid contained in small capsules or beakers, I found it impossible to obtain reliable results with the usual long stem thermometers, and I experienced great difficulty in obtaining a trustworthy thermometer with very short stem, so as to permit at least the larger portion of the mercurial column or the whole bulb to be immersed in the liquid. It occurred to me then, that for the purpose above mentioned. as well as for many other uses, a modification of the shape and position of the bulb of the thermometer would be a useful improvement. Thermometers in which the bulb consists of a coil of tubing filled with mercury have long been in use for ordinary and domestic purposes. It only remained to give another direction to the stem so that it would stand upright when the coil was placed on a flat surface. A considerable number of these thermometers (not graduated) were made by the manufacturer at that time, to be kept in stock for future use, and to allow them to season. One of them, now three years old, has recently been graduated for me, and the graduation examined by the Thermometric Bureau of the Observatory of Yale College. The differences from true temperature, ascertained for each separate degree, are quite small, and not more than are to be found in all good thermometers. It fulfils all the conditions it was designed for, though a still further improvement is in contemplation, namely, to cause the stem to arise from the centre of the coil, instead of from the outside, which will diminish the diameter of the coil. The thermometer graduated for me has a stem of six inches in length, and a coil of two inches in diameter. It is graduated from 32° to 120° F. The thermometers of this shape, thus far made, are not intended for temperatures beyond about 125° F., though they could be made to run as high as others should there be any demand for them. The fact that they will stand upright of their own accord makes them very useful in many operations. Accompanying this paper is an illustration of the thermometer. The manufacturer is Giuseppe Tagliabue, of New York.

A New Element.

The discovery of a new non-metallic element is announced by Mr. C. Winkler (*Berichte*, XIX., 210), for which the name "germanium," and the abbreviated symbol Ge, are proposed. The new metalloid is said to have been found in a mineral from Freiberg, known as "argyrodite" rich in silver. Further particulars of the discovery are promised in another communication.

Lanolin.—This is a name applied to a fatty substance extracted from the natural wool-grease or suint, and intimately mixed with about 20 per cent of water. Jaffé and Darmstädter of Charlottenburg, near Berlin, lately succeeded in working out a process by which the difficult problem of purifying wool-grease has been practically solved. One of the products obtained was found to be, when pure, absolutely neutral, unsaponifiable, and having the remarkable property of being able to take up over 100 per cent of water, forming a very soft vehicle for applying remedies.

As put on the market, lanolin already contains 20 per cent of water. It is a yellowish-white mass of the consistence of simple ointment.—*Pharm. Centralhalle*, No. 46.

(Original Communication.)

ON TEREBENE, TERPENE, TERPIN, AND ALLIED BODIES.

We have received a number of inquiries from correspondents regarding several members of the turpentine group of chemicals which have lately been recommended in medicine. The statements made by our correspondents, as well as the indiscriminate method of spelling the terms inquired about, convinces us that there is a great deal of confusion existing regarding the nature of these bodies. Indeed, we have reason to know that there is even a good deal of confusion among medical authors in this respect, since we have seen one and the same substance called by two or three different names in different articles contained in one and the same journal. But there is not only confusion among some of the recent medical writers, and the average readers of pharmaceutical and medical journals, but there has even been some confusion among the authorities who have studied the subject, and who have recorded the results of their experiments, as may be seen by the not unfrequent occurrence of contradictory figures or observations attributed to apparently the same substance by different observers. To some extent this may be owing to the circumstance—pointed out to us by a friend residing in the midst of the turpentine districts, and making a special study of the products—that some investigations were not started from absolutely certain premises, the experiments being perhaps performed with products of different origin or mode of preparation than had been reported to the experimenter. It is to be hoped that a renewed study of the products, on the spot, by a competent authority, will clear up some of the doubtful points.

Among the organic hydrocarbons there is a series distinguished by the generic name:

Terpenes, which have the composition $C_{10}H_{16}$ or a multiple of this, and are sometimes also called camphenes.

These may be considered as addition-products of hydrocarbons of the aromatic or benzol series, the close relationship being, among other proofs, shown by the fact that, when iodine is made to act upon oil of turpentine, the products are, almost quantitatively, cymol and hydriodic acid

$C_{10}H_{16}$	+	I_2	=	$C_{10}H_{14}$	+	2HI
oil turpentine		iodine		cymol		hydriodic acid.

Terpenes have the faculty of uniting directly, that is, of forming addition products—with halogen acids as well as with water. They are also very easily polymerized, that is, condensed to multiple molecules, each containing two or more of the simple molecule $C_{10}H_{16}$—either by heat alone (under pressure), or by the intervention of certain reagents, such as sulphuric acid, boron fluoride, etc.

The word *terpene* is used as a generic term to denote any one or all the members of this class of bodies.

It is not used, as such and by itself alone, to denote any individual terpene; but in association with other words—terpene hydrate, terpene chlorides, terpene mono-, di-chloride, etc.—it designates special individuals.

The word *camphene*, on the other hand, though it has been and is even at present sometimes employed in a generic sense, equivalent to terpene, is at the same time specially applied to a particular kind of terpene, as will be seen directly. For this reason, it will be best to abandon the generic use of the term *camphene* entirely.

To facilitate the explanation of the subject, the following scheme is inserted here, which exhibits the more important members of this group and their derivatives, together with their relations:

Terpenes: $C_{10}H_{16}$ or $(C_{10}H_{16})x$

A. *Natural Terpenes.*
- terebenthene } from oil of turpen-
- australene } tine
- (and others).

B. *Artificial Terpenes.*
- camphene (and terebene)
- colophene
- (and terpenes from many volatile oils: cajeputene, cedrene, menthene, etc., etc.).

C. *Derivatives of French Oil of Turpentine* (terebenthene) *only.*
- terpene hydrate.

D. *Derivatives of any Variety of Oil of Turpentine.*
- terpene hydrochloride
- terpin hydrate
- terpin
- terpinol
- terpinene
- terpilene (terpinylene).

1. *Oil of Turpentine*, the most abundant source of terpenes, is obtained by the distillation of turpentine, the naturally exuding balsam or oleo-resin of coniferous trees.

There are two chief varieties:

a. The *lævogyre*—turning the plane of polarized light to the left.

Of this kind is the French oil of terpentine, obtained from *Pinus maritima* Poiret (= *Pinus Pinaster* Solander). The boiling-point of this oil is 155° C. (311° F.), and the spec. grav. 0.8749 at 0° C. (32° F.).

The oil of turpentine distilled from Venice turpentine, the product of *Larix europæa* D. C., and that obtained from Canada balsam, derived from *Abies balsamea* Marshall and allied species of Abies, are likewise lævogyre. But the latter is not a commercial product, and the former is not common.

b. The *dextrogyre*—turning the ray of polarized light to the right.

Of this kind is all that is produced in the United States, from *Pinus Tæda* L., and *Pinus australis* Michaux (= *Pinus palustris* Miller). Also all that is distilled in Russia, Sweden, and elsewhere from *Pinus silvestris* L.

There are also varieties of oil of turpentine which are compounds of the two preceding.

Most Russian oil of turpentine, which is chiefly derived from *Pinus silvestris* L. and *Pinus Ledebourii* Endlicher, (*Larix sibirica* Ledebour) is composed of a very large proportion of dextrogyre (boiling at ab. 171° C. = 339.8° F.) mixed with a little lævogyre (boiling at 157° C. = 314.6° F.) oil of turpentine. It is not known what may be the cause of this. But it appears probable that it is due to the simultaneous presence of turpentines derived from different species of Pinus, when the oil is distilled off. A correct knowledge of this question can only be obtained by examining absolutely authentic samples of the several turpentines.

Scotland also produces some oil of turpentine, composed to about $\frac{1}{3}$ of a dextrogyre and $\frac{2}{3}$ of a lævogyre portion. The former boils at 156°–159° C. (312.8°–318.2° F.); the latter at 171° C. (339.8° F.).

So-called German oil of turpentine is almost exclusively produced in Russia, though small quantities are made here and there in Germany from *Pinus silvestris* L., *Pinus nigra* Link, *P. rotundata* Link, and *Pinus Abies* L. In Austria, some oil of turpentine is also made from *Pinus Laricio* Poiret, but it is not known to us what the optical properties of this oil are.

From any of the above oils of turpentine, which in their crude state are contaminated with resin, organic acids and other impurities, the hydrocarbon or terpene may be obtained in a pure state by the following process, in which neither the heat nor the reagents employed are energetic enough to modify the nature of the terpene.

The crude oil of turpentine is first washed with a dilute solution of caustic soda, until it ceases to have an acid reaction, and then distilled in vacuo. By selecting the proper fraction of the distillate, the pure terpene may be obtained.

As there are oils of turpentine of opposite optical properties, so there are two kinds of terpenes, namely:

a. Terebenthene (*or terebentene*) which is lævogyre, and only obtained from French and other left-polarizing oil. The terebenthene from French oil of turpentine boils at 156° C. (312.8° F.) and has a spec. grav. of 0.8767 at 0° C. (32° F.). The corresponding figures of other left-polarizing terebenthenes are not certain.

b. Australene, which is dextrogyre, and obtained from American and other right-polarizing oil. The boiling-point and specific gravity of this appear to vary somewhat according to the source.

It has been pointed out above that terpenes, in general, are very easily polymerized. So it is, for instance, only necessary to heat oil of turpentine to 300° C. (572° F.) in sealed tubes. It will then be changed into a mixture of *metaterebenthene* (probably $C_{20}H_{32}$), boiling above 360° C. (680° F.); and into either of the following two isomeric varieties of the original terpene: 1. *dextro-isoterebenthene*, and 2. *lævo-isoterebenthene*, according as a right or left-polarizing terpene has been used. These products, not being, however, of practical interest, will not be further described here.

When oil of turpentine is shaken with sulphuric acid, it is converted into *camphene*, *terpilene*, *cymol*, *colophene*, and a hydrocarbon: $C_{10}H_{20}$. According as a right or left-polarizing oil has been employed, a correspondingly polarizing camphene is produced. Yet by repeatedly distilling or shaking the product with sulphuric acid, there is at last produced a variety of *camphene* which is optically inactive, and which is the substance named.

2. *Terebene.*—It was St. Claire Deville who first studied the terebene produced by the action of sulphuric acid upon oil of turpentine. J. Riban subsequently found that this "terebene" was not a pure substance (*Comptes Rend.*, vol. 79, 1547; 77,483). The latter chemist treated oil of turpentine, boiling at 156°–160° C., with one-twentieth of its weight of sulphuric acid, avoiding the development of too much heat, and after twenty-four hours he distilled the supernatant liquid, previously washed with soda-solution, and dried. The fraction boiling below 250° C. (482° F.) was treated five to eight times in the same manner. At each distillation, there was formed sulphurous acid and water. The product finally obtained was optically inactive, and could be split, by fractional distillation, into the following substances:

1. Terebene, boiling at 155°–156° C.
2. Cymol, boiling at 174°–176° C.
3. A camphor-like body, boiling at about 200° C., and melting at 169° C.
4. Colophene, boiling at 318°–320° C.
5. Higher boiling bodies.

That portion of the original crude substance which boiled between 155° and 186° C. was treated with metallic sodium before being subjected to fractional destillation.

The "pure terebene" thus obtained by Riban was a colorless, mobile liquid, not becoming solid when cooled to 27° C. (81° F.), and possesing a faint odor.

Riban found the specific gravity of his terebene to be 0.877 at 0° C. (32° F.), and 0.860 at 20° C. (68° F.). Orlowsky found it to be 0.8624 at 15° C. (59° F.), which agrees with the figures of Riban.

Terebene, in the form in which it is prepared by manufacturers and em-

ployed in medicine, nearly corresponds, in physical and chemical properties, with the terebene of Riban just described. In practice, it is not considered necessary to be very particular about the exact boiling-point of the fraction collected. The chief requirement is, that it shall be optically inactive, and free from those portions which boil above 160° C.

A few authorities still recognize the existence of terebene as a chemical individual, while others prefer to regard it merely as optically inactive camphene.

Riban himself distinguished two varieties of inactive camphene, which he prepared by heating terpene chlorides with dry sodium acetate or stearate. These two substances are both crystalline, melt at 47° C. (116 F.°), and boil at 157° C. (314.6° F.), and are probably identical.

Riban states that his terebene is a colorless mobile liquid. When the crude terebene, however, which is obtained by the process to be described below, is purified as much as possible, and freed from high- or low-boiling fractions, it forms a white crystalline mass, melting at about 50° C. (122° F.), and boiling at about 160° C. (320° F.) These two values, when corrected to normal temperature and pressure, so closely approach those given above on Riban's authority for the inactive camphenes that they may probably be considered as identical.

However this supposed identity may eventually turn out, the name *terebene* appears to be confined to a well-characterized substance, and, being free from ambiguity, should be retained at least as a medical and commercial term.

This substance, terebene, differs from cymol only by having two more atoms of hydrogen, and is closely related to it, and through it to the benzol group, for cymol itself is now recognized as propyl-toluol.*

The preparation of, and further details regarding medicinal *terebene* will be given further on.

It has been stated that one of the products of the treatment of oil of turpentine by sulphuric acid is *colophene*. This does not specially interest us here; but it may be remarked that, when the crude product obtained by mixing oil of turpentine and sulphuric acid is distilled with steam (which causes crude "terebene" to pass over) there remains in the retort crude colophene, which, when distilled by itself, likewise yields camphene, terpilene, cymol, and the hydrocarbon $C_{10}H_{20}$.

3. *Terpene Hydrate:* $C_{10}H_{16}.H_2O$.

This substance is derived from left-polarizing (French, etc.) oil of turpentine. It may be prepared in the following manner.

Mix 2 parts of French oil of turpentine with 3 parts of 90 per cent alcohol and 1 part of sulphuric acid of spec. gr. 1.640, shake frequently at first, then set aside for twelve days, separate the terpene and rectify it, preserving the portion boiling between 218°-220° C. (424-428° F.) It is an oily liquid, of the spec. grav. 0.9201 at 18° C. (64.4° F.), insoluble in water, but soluble in a mixture of 2 parts of 90 per cent alcohol and 1 part of sulphuric acid (sp. gr. 1.640).

Products obtainable from any Kind of Oil of Turpentine.

4. *Terpene Hydrochlorides.* When hydrochloric acid gas is passed through any kind of oil of turpentine, best after its dilution with benzol or carbon disulphide, a solid substance *terpene (mono-) hydrochloride*, $C_{10}H_{16}.HCl$ is formed which is also known as "artificial camphor." It is solid, resembles camphor in appearance and odor, is insoluble in water, easily soluble in alcohol, but cannot be sublimed without alteration.

On treating oil of turpentine with strong hydrochloric acid, also on similarly treating terpin hydrate (see below), or terpinol (see below), or terpene hydrate (see above), *dihydrochloride of terpene* $C_{10}H_{16}.2HCl$ is formed. This forms rhombic crystals, melting at 48° C. (118.4° F.).

Other hydrochlorides exist, but are not of special interest here.

5. *Terpin Hydrate:* $C_{10}H_{16}(H_2O)_2.H_2O$.

This may be prepared from any kind of oil of turpentine. Of pure terpenes only those yield this substance which have the lower boiling-points. Terpenes boiling at about 176° C. (348.8° F.) and over, yield none.

This substance, which must neither be confounded in name with terpene hydrate, nor in appearance with terpene dihydrochloride, or other similar bodies, is formed in various ways. It is slowly produced when oil of turpentine remains for some time in contact with water. More rapidly, by exposing 8 parts of oil of turpentine, 2 parts of nitric acid (spec. gr. 1.250), and 1 part of alcohol of 80 per cent, to the air in a shallow vessel, frequently agitating at first. Or by mixing in a flask 1 volume of nitric acid (sp. gr. 1.400), 1 vol. of wood-spirit, and 2½ vol. of oil of turpentine, agitating frequently during two days, then pouring into an open dish, and adding small quantities of wood-spirit every other day.

Terpin hydrate crystallizes in large, transparent, rhombic crystals, which lose 1 mol. of water at 100° C. (212° F.) and becomes *terpin* (see the next following). Mere exposure over sulphuric acid will also drive out the third molecule of water. The crystals are inodorous and tasteless, soluble in 200 parts of cold and 22 parts of boiling water, in about 7 parts of 85% alcohol, and easily also in ether. From hot glacial acetic acid they may be obtained of great size and beauty. Crystals of this compound, of considerable size, are sometimes met with in trunks of pine trees.

This *terpin hydrate* has recently been recommended by Lepine as "the best expectorant in existence." See article in our January number, p. 15.

6. *Terpin:* $C_{10}H_{16}(H_2O)_2$.

When terpin hydrate has been deprived of the third molecule of water, it becomes "anhydrous" terpin: $C_{10}H_{20}O_2$. This melts at 103° C. (217.4° F.), subliming in slender needles, and boils at 250° C. (482° F.). It is very hygroscopic, and changes to terpin hydrate by mere exposure to moist air.

When treated with anhydrous phosphoric acid (P_2O_5) it is converted into "terebene" and colophene.

The name *terpin* has been used by some authors (f. i. Flückiger, Pharm. Chemie., 320 sqq.) as denoting *terpin hydrate:* $C_{10}H_{16}(H_2O)_2$. It is better, however, to apply the two terms as explained above.

7. *Terpinene.* When terpin is treated with moderately strong sulphuric acid, there results *terpinene*, boiling at 176.5-181.5° C. (349-358° F.), and optically inactive (Laubenheimer).

8. *Terpinol:* $(C_{10}H_{16})_2H_2O$.

If an aqueous solution of terpin be heated with a small quantity of hydrochloric acid, *terpinol* is produced, which is an oily liquid, having an odor resembling that of hyacinths, boils at 168° C. (234.4° F.), and has the spec. gr. 0.852.

The same substance may also be produced by boiling terpene dihydrochloride with water or with alcoholic potassa. Or, by distilling terpin with moderately dilute sulphuric acid.

9. *Terpilene* or *Terpinylene:* $C_{10}H_{16}$.

This body is formed by warming terpene dihydrochloride (of the melting point 48° C.=119° F.) by itself. Or, by boiling terpin with a mixture of 1 vol. of sulphuric acid and 2 vol. of water, and fractionating the product. It boils at 176-178° C. (349-352° F.), and has the spec. grav. 0.8526 at 15° C.

It will be noticed that a comparatively small change in the kind or strength of acids or other modifications in manipulating oil of turpentine and terpenes in general may result in the formation of substances differing considerably from each other. It is, however, not at all improbable that some of these, now recognized as chemical individuals, will in the future be shown not to have a separate existence.

In conclusion we shall give working processes for the preparation of

Medicinal Terebene

according to Dr. Hirsch:*

Oil of Turpentine.....1000 parts.
Sulphuric Acid, concentrated.q. s.
Solution of Soda..... ...q. s.

Mix the oil of turpentine with 25 parts of sulphuric acid, in *one* portion, and agitate thoroughly. When the heat generated thereby has become moderated to 70° C. (158° F.), add another portion of 25 parts of sulphuric acid. Repeat this, in suitable intervals, with three more portions, each of 25 parts, of the acid, taking care that the mixture do not acquire too high a temperature (if not properly watched, it might rise to 130° C.=266° F., and even higher). Shake the mixture for some time, in brief intervals, then set it aside for 24 hours. Remove the oil from the acid, wash the former with enough solution of soda to remove all trace of acidity, then transfer the oil to a retort, and pass a brisk current of steam through it as long as any oil passes over.

The distillate is crude terebene, and should be optically inactive (which is to be ascertained by means of a polariscope). If it is not yet inactive, but turns the plane of polarized light either to the right or to the left [the latter would happen only if French or other left-polarizing oil had been originally used], treat it again with sulphuric acid, in proportion of 5 parts of acid to 100 of oil, and again distil with a current of steam.

From the optically inactive product finally obtained, which is a mixture of terebene and other hydrocarbons, the real terebene is separated by repeated fractional distillation, all portions boiling above 160° C. (320° F.) being rejected.

When perfectly pure, terebene is a white crystalline mass. In the form in which it used as an antiseptic, it appears as a clear, colorless, optically inactive liquid, having a pleasant odor resembling that of thyme, the spec. grav. 0.860, and boiling at about 156° C. (313° F.).

Terebene has recently been highly recommended by Dr. Murrell as an excellent remedy in winter-cough, beginning with doses of 5 or 6 drops on sugar every 4 hours, and increasing up to 20 minims. The only disadvantage that has been noticed is this, that it imparts a peculiar odor to the urine. If used as a spray, from 1 to 2 oz. should be diffused and inhaled every week.

Shortly after Dr. Murrell had published his paper on this subject in the *Brit. Med. Journ.*, Dr. Bond, of Gloucester, claimed priority for the application of terebene in medicine, and implied that its manufacture was protected by a patent. The patent, however, does not protect the manufacture, since the product and the process by which it is obtained were known to chemists long before. Any one is, therefore, at liberty to prepare it.

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* *Benzol* is C_6H_6.
Phenol is benzol in which 1 at. of hydrogen is replaced by HO (hydroxyl): $C_6H_5.HO$.
Toluol is benzol in which 1 at. of hydrogen is replaced by methyl (CH_3), and as it is thus analogous to phenol itself, it has been defined as phenyl-methane: $C_6H_5.CH_3=C_7H_8$.
Cymol or Propyl Toluol is toluol in which an additional at. of hydrogen (of the benzol nucleus) is replaced by propyl (C_3H_7): $C_6H_4.CH_3.C_3H_7=C_{10}H_{14}$.

* In *Supplement zur der zweiten Ausgabe der Pharm. Germ.*, 8vo, Berlin, 1883.

JAR COVER.

THE cover, which is about the same diameter as the rim of the jar, is made of wood rendered waterproof by varnish or paint. To opposite edges are secured wire fasteners made of iron or steel spring wire. The form of these wires is clearly shown in the engraving. The cover is placed on the jar by bringing one of the spring fasteners into engagement with the under side of the rim of the jar, then pulling the other fastener until it will pass over the rim, then pushing down the cover, and releasing the second fastener, which will engage with the rim. The cover is removed by pulling out one of the fasteners. The cover can be made to fit any size jar. This invention has been patented by Mr. W. F. McFarland; particulars can be had from Messrs. McFarland and Bowles, of Pleasantville, O.—*Scientific American*, March 13th, 1886, page 163.

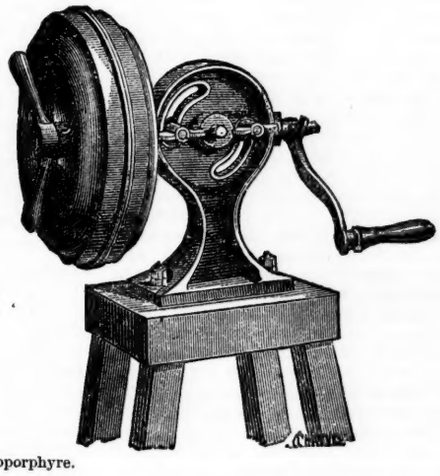
Milk-Wine or Kefir.

ACCORDING to a recently published instruction of Dr. Rogelmann, of Graz (Austria), in the *Deutsche Medizinal-Zeitung* of January 14th, 1886, one volume of buttermilk is to be mixed with one or two volumes of sweet milk, poured in a bottle, and allowed to stand. In three hours active fermentation will set in which, in about three days, will be at an end. The product is a fluid smelling like wine, and containing alcohol, carbonic acid, lactic acid, and caseine. The following precautions are to be observed in this in every way simple and inexpensive procedure. The sweet milk used ought not to be wholly freed from the cream, and the bottles ought to be of a size that the milk fills only two-thirds of them. The fermenting milk is to be shaken daily vigorously (about three or four times), during which manipulation a cork is placed firmly in the bottle, but removed after the shaking in order to allow the carbonic acid to escape. The opened bottle is to be placed in a horizontal position at least twice daily for a period of ten minutes, in order to let fresh air take the place of carbonic acid, and to thus prevent the stoppage of fermentation. If a very effervescent liquid be desired, the bottles are toward the close of the fermentation process allowed to stand continuously in a perpendicular position. In order to obtain new quantities of this "milk-wine," we add to a certain quantity of sweet milk one-fifth its volume of milk thus fermented, and are so able to continue this production *ad libitum*. The most favorable temperature for the preparation of this milk-wine is 15° C. (59° F.).—*Therap. Gaz.*

THE VELOPORPHYRE.

B. GIRAUD, of Dijon, France, is the inventor of a pharmaceutical appliance intended to facilitate trituration, and the mixture of fatty bodies of different consistence or with powders. It is rather limited in its adaptability to pharmaceutical work on a small scale but for working considerable quantities it may be of great assistance. It consists of two halves of a hollow ring of polished metal adapted to be firmly clamped together so that their edges form a close joint, and arranged on an axis that can be turned by a crank or by a pulley and band. The axis is supported on a stand in such a manner that it can be tilted to any angle within 90° to facilitate the charging and emptying of the apparatus. The thorough admixture of the contents of the machine is secured by means of a heavy metal ball which plays rather loosely in the annular cavity formed by the two disks. This ball needs to be of considerable weight to overcome the resistance of the mass being treated, and the centrifugal force of the machine when in motion.—*Western Druggist*, from *l'Union Pharmaceutique*.

Jar cover.



Veloporphyre.

Albuminate of Iron.

A PREPARATION under the name albuminate of iron has been proposed or used frequently during the last few years, but its rather unstable character has been an obstacle to its more general employment.

Mr. de Groot believes to have overcome this difficulty by starting, not with fresh white of egg—which cannot well be filtered so as to be clear, and thereby renders the final product cloudy—but with dried egg albumen. His directions are as follows: Make a ten-per-cent solution of the latter, and filter. Add a dilute solution of sublimed ferric chloride, until the albuminate of iron at first precipitated is entirely redissolved, by active stirring, in the excess of ferric chloride. Subject the resulting solution, which has a very astringent and saline taste, to dialysis, until it no longer gives the the chlorine reaction with nitrate of silver. In this manner, the whole of the excess of ferric chloride, free hydrochloric acid, and other salts, particularly the chlorides of sodium and potassium (which might precipitate the albumen) are eliminated. Next reduce the whole to a definite weight. Since the liquid, in consequence of the large quantity of albumen it contains, becomes very viscid on evaporation, de Groot adopts for his dialyzed solution of albuminate of iron, the strength of 1 part of ferric oxide (Fe_2O_3) in 500 parts of the solution.

The finished solution has a specific gravity of 1.010, is perfectly clear, has a slightly acid reaction, and a sweet and agreeable taste provided the proportion of iron above-mentioned is in solution in the state of albuminate.

The solution remains unaltered for a considerable time, even in partly filled bottles. Neither heat nor the addition of alcohol changes it, and alkalies or even small quantities of acids may be added to it without affecting it. A solution of chloride of sodium, however, precipitates the albuminate, and from the latter, the albumen is separated by small quantities of acid. On evaporating the solution at a temperature not exceeding 40° C., a dry product may be obtained, containing 2.5% of iron. But as the compound in its dry form is soluble only with difficulty in the stomach, the author prefers the solution. —*Journ. de Ph. d'Anvers.*

Papayotin.

PROF. ABRAHAM JACOBI, of New York, reports four cases of diphtheria in which the membrane was digested and gradually dissolved away or at least detached in shreds by the application of a solution of papayotin.

Papayotin, regarding which several notices will be found in preceding volumes of this journal, is a vegetable digestive ferment obtained from the juice of the trunk, leaves, or fruit of the Papaw-tree, *Carica Papayâ* L.

Prof. Jacobi states that he had used the substance some years ago, at first with moderate success, but was compelled to abandon it in consequence of its apparent variability. In fact, he states that certain unsatisfactory samples or lots were found to consist, "under the legitimate rules of modern tradesmen and manufacturers, of milk-sugar." Recently, however, he began to use the substance again, having probably received it from a more reliable source, and he finds it to be a most efficient agent, if properly used. He employs a solution containing

Papayotin	1 part
Glycerin	4 parts
Water	4 "

which is to be applied hourly to the diphtheritic membrane. In one case where tracheotony had been performed, and the development of the pseudo-membrane progressed downwards into the trachea and bronchi, the solution was applied by means of a feather from a live pigeon's wing, which was dipped in the solution and, being introduced through the rubber tube in the trachea, was pushed down

and turned around several times so as to leave as much of the solution as possible in contact with the false membrane. After a few hours, shreds of the latter were coughed up. The treatment was continued through some days. More membranes came; gradually they became softer and macerated, and finally the secretion became muco-purulent and mucous. Before the end of the second week the tube was removed.

Physicians who wish to use papayotin should know that there are two kinds sold by manufacturers. One is the *pure* ferment; and the other is a dilution containing only 25% of pure papayotin, the remainder being generally milk-sugar. To judge from the price-lists of European manufacturers of chemicals, some of them prepare only the 25% dilution, which, if labelled merely "papayotin," is liable to disappoint those wishing to try the article in diphtheria. Some manufacturers quote both the 25% dilution and the pure ferment itself: for instance, Gehe & Co., of Dresden.

At first it was supposed that the milk-sap obtained from the fruits alone would be suitable for preparing larger quantities of papayotin, because Dr. Peckoldt found nearly eighty times more papayotin in the fruit than in the leaves. But the latter being accessible in any quantity, while the fruit is not, it soon became evident that the leaves would have to form the source.

Much difficulty was at first encountered in devising an easy method of preserving the milk-sap obtained from the leaves, so as to keep it active and to permit the subsequent extraction of the digestive ferment itself. It was found that the best method was to permit the sap to fall immediately into glycerin, which prevented its decomposition, and diminished its annoying property to gelatinize. Some manufacturers at that time attempted to prepare papayotin from the *dried* leaves of Carica papaya, which they imported for the purpose, but without success. Only the *fresh* leaves can be used; and as the tree grows to advantage, and abundantly, only in its own home, some plan had to be devised to facilitate the collection and transportation of the crude juice. In April, 1882, Gehe & Co. reported [see NEW REM., 1882, p. 177] that, while their papayotin was quite effective, they themselves did not place much confidence in it, and did not think that the article would have an assured future. About the same time, however, E. Merck, of Darmstadt [see NEW REM., 1882, 240] appeared to have been more successful, since he found his preparation to peptonize two hundred times its own weight of fresh blood-fibrin deprived of moisture, while other preparations were then on the market which were very inferior.

From a report made by Gehe & Co. in 1883 [NEW REM., 1883, 174] it appears that the dried juice of Carica papaya, which, previous to the preparation of papayotin, had to do duty as the crude ferment, was then no longer salable. At this time, also, these manufacturers had been compelled, by the demands made upon them from physicians and others, to put on the market, not only the pure papayotin, but also a dilution containing 25% of it, which latter was in much greater demand than the former. It is, however, not at all unlikely that the weaker preparation was often ordered designedly for the sake of economy, and many who tried the new agent probably remained in ignorance of the fact that they had a diluted preparation under their hands. In their September report of 1884 [AMER. DRUGG., 1884, 212], Gehe & Co. state that they have induced their South American agent to adopt the following process for the preparation of a crude papayotin, which is purified after its arrival in Europe. Before the adoption of this process, it was customary to inspissate the juice that was collected, and transport it thus to Europe. The process mentioned by Gehe & Co. is as follows: The fresh milky juice of the fruit [also leaves?] of Carica papaya is diluted with water (which is saturated with chloroform, in case the aqueous liquid has to be kept so long that it would be liable to spoil); and, when the resinous particles have separated, the liquid is filtered; or the liquid is mixed with just enough alcohol to produce a slight precipitation of papayotin, which carries down with it all impurities. The clear liquid is now poured into about seven times its volume of 90% alcohol, the resulting precipitate strongly expressed on muslin, and dried with a very gentle heat.

Citrate of Bismuth.

THOUGH the U. S. Ph. does not officially recognize a *Liquor Bismuthi*—a preparation still considerably in vogue—it has supplied the deficiency in part by furnishing a formula for Bismuthi et Animonii Citras, which needs to be merely dissolved in water to obtain the desired solution of bismuth. This compound salt, however, requires for its preparation a citrate of bismuth, for which the U. S. Ph. provides a working process based upon that proposed by Rother. The recent British Pharmacopœia also gives a process for the preparation of this salt, but both of them appear to be somewhat faulty, as has been pointed out repeatedly. The last paper referring to the subject, mainly with reference to the British formula, was recently read at the Edinburgh Chemists' Assistants' and Apprentices' Association, by Peter McEwan, and we take from it the following portion (after *Chem. and Drugg.*):

I have obtained by the [officinal] process, a citrate free from nitrate, yet not wholly ammonia-soluble; and this I take to be due to the presence of oxycitrate, the reaction between the basic nitrate and citric acid being:

$$3BiONO_3 + H_3C_6H_5O_7 = (BiO)_3C_6H_5O_7 + 3HNO_3.$$

This reaction is only partial, no doubt, but the nature of the process favors it. We have the same error of principle exemplified in Rother's process, now official in the U. S. P. In this process, bismuth sub-nitrate, citric acid, and water are boiled together. Here also, though the subnitrate undergoes complete decomposition, the product is not wholly ammonia-soluble. I have tried repeatedly and cannot get the desired result by this process, and others in whom I have much confidence have had the same experience.

It was expected, owing to the introduction of oxide of bismuth into the 1874 Addenda, that Wood's process would have been adopted, and even Mr. Umney takes the new process as Wood's; but it is not so. In Wood's process, bismuth oxide, preferably fresh, is dissolved in a mixture of solution of ammonia and ammonium citrate. This is a distinct advance on the old process, but it has one objection, viz., an excess of ammonium citrate, which we know to be unnecessary. M. Méhu, however, has proposed a process which is all that can be desired. M. Méhu dissolves crystallized bismuth ternitrate in a strong solution of citric acid, saturates one-half of the mixture with ammonia, then adds the other half of the mixture, when normal bismuth citrate is precipitated.

I have had admirable results by this process, slightly modified. The citrate is precipitated in a bulky state, and when dried on bibulous paper in a hot-air oven, it is obtained in light and milk-white flakes, and forms with ammonia a bright, almost water-white solution, there not being a particle of insoluble residue. Méhu brings forward the process ostensibly for the direct preparation of liquor bismuthi, but, as his original paper does not contain other than approximate quantities, I give a formula for a pint [British] of liquor.

Take of

Subnitrate of bismuth	1 oz 180 grains
Citric acid	1 oz. 60 "
Nitric acid	1½ fl. oz.
Solution of ammonia and distilled water, of each a sufficiency.	

Heat the subnitrate with the nitric acid until the salt has dissolved, and the solution has acquired the appearance of a syrup; with this mix the citric acid, previously dissolved in 1 oz. of water by the aid of heat; divide the solution into two equal portions, and to one portion add solution of ammonia until the precipitate at first formed is redissolved; dilute with water to one pint, add the remaining portion of the bismuth solution with constant stirring, collect the precipitate on a calico filter, and wash with water until the washings are free from acid. Transfer the precipitate to a suitable vessel, and add solution of ammonia gradually, and with constant stirring, until the precipitate is just dissolved. Dilute with water to 1 pint.

A competent practical pharmacist has, at my request, tried this formula, and says that it is "an absolute contrast in its simplicity to the B. P. method;" but he fears there is a great loss of bismuth in washing. This I had previously determined to be under 3 per cent, having obtained 97 per cent of the theoretical yield of citrate. Hence, in this formula, I give a slight excess of bismuth over what is required for 800 grains of citrate, and, as the B. P. allows 2 per cent of water in the citrate, the loss in the washing is compensated by these provisions. Citric acid is also in excess. With the theoretical quantity the bismuth is apt to crystallize out before ammonia can be added. On the large scale, it will be possible to modify the proportions which I give; thus, for bismuth citrate the quantities might be: bismuth subnitrate, 13 parts; nitric acid, 13 fl. parts; citric acid, 10 parts.

Improved Mucilage.

THE use of crystallized aluminium sulphate has been recommended as a valuable addition to solution of gum arabic. The adhesive property of the mucilage is said to be so greatly increased as to render it capable of joining together wood, glass, or porcelain. The formula is as follows:

	Parts.
Aluminium Sulphate	2
Distilled Water	20
Dissolve, and add to	
Strong solution of gum arabic (2 gum to 5 water)	250

—*Chem. and Drugg.*

NOTE OF ED. AMER. DRUGG.—This is an old process, but deserves to be occasionally recalled to the mind of our readers. On page 190 of NEW REMEDIES for 1876, we quoted a formula which calls for 30 grains of sulphate of aluminium to 8½ fl. oz. of strong mucilage. We have used this proportion ourselves for years, and have found it to answer very well. But we have also found that the best results are attained by raising the mixture to boiling and then straining, and (if desired) setting aside in full bottles to settle. A small proportion (about 2%) of glycerin added to the product will render it less hard and brittle when dry. If used for labels, the proportion of glycerin may be raised to 8 or 10%. It is also noteworthy that book-binders, paper-hangers, and box-makers generally add alum to the paste of wheat flour used by them.

ALARM FOR POISON BOTTLES.

THE following description of a new alarm apparatus to be attached to poison bottles, which forms the subject of German patent No. 28,935, is taken from the *Pharm. Zeitung* (No. 7):

The contrivance consists of a hollow case to be attached at the bottom of the shop-bottle. The latter is placed within the ring *a*, and the interval carefully filled with cement. The bell *b b* is fastened to the upper diaphragm of the case by means of the screw *e*, and the clapper *d* can roll freely about in the space covered by the bell. The pear-shape given to the clapper has this advantage that it sooner returns to a rest when the bottle is set down, and also that it gives a better sound when moving the bottle about.

The alarm being constantly attached to the bottle, it is likely to make itself noticeable whenever the bottle is touched or lifted up.

New Formation of Iodoform and of Analogous Iodine Compounds.

HEINRICH SPINDLER has made the interesting observation that the organic iodides of the paraffin series—namely, iodoform and the corresponding compounds of ethyl, etc.—can be prepared from the chlorides, or bromides, or chlorobromides of the particular paraffin by reaction with an inorganic

FIG. 1.

Alarm bottle.

iodide, provided only that the organic iodide in question is capable of existence, and provided also that the proper inorganic iodide is selected. Among the latter, the author found hydrated calcium iodide to be the most suitable.

If chloroform and anhydrous iodide of calcium are heated together at a temperature of 75° C. (167° F.), even for 120 hours, not the least formation of iodoform could be discovered. It began to be gradually formed, however, when the temperature was raised to 120° C. (243° F.).

The results obtained with crystallized (hydrated) iodide of calcium, however, were entirely different. The iodide, which the author experimented with, was obtained from H. Trommsdorff, in Erfurt, had a whitish or yellowish color, and had been fused in its water of crystallization. It appeared in fused, radiately crystalline, very hygroscopic pieces, melting between 70° and 80° C. (158°–176° F.). On allowing it to lie exposed to the air, it gradually decomposed with liberation of iodine. Heat accelerated this decomposition. On analysis it was found to contain 17% of water, corresponding to the composition $CI_2.3\frac{1}{2}H_2O$, the fraction being probably due to loss of water during the final melting of the iodide.

The author made his experiments on a small scale, and in tubes which were fused at the end, after the substances had been introduced. It was found that it was necessary to exclude every trace of water except that already contained in the iodide of calcium, and the great avidity of this salt for water made rapid working necessary.

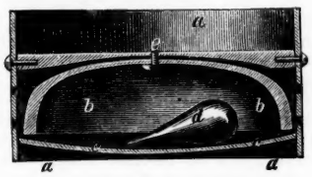
In experimenting with chloroform, the author employed 1.35 Gm. of this liquid, and 5 Gm. of calcium iodide. [The latter salt was always taken in quantities somewhat smaller than necessary for a complete transformation of the organic substance.] The reaction was carried out in a closed tube, at 75° C. (167° F.), and after cooling the same, the tube was found to contain iodoform in crystals, together with unchanged chloroform and the other products of the reaction. The yield was 17.40 per cent. On raising the temperature to 100° C., the yield became very much larger. But the heat must not be allowed to exceed 140° C. (284° F.), since otherwise the iodoform would be decomposed.—After *Liebig's Annal.*, 231, 257.

[NOTE OF ED. AM. DRUGG.—Whether iodoform can ever be prepared economically by this process is very doubtful. It is, however, not at all improbable that a practical and economical method may be worked out by combining the novel features of the new patented process for making chloroform—which has caused such a tumble in the price of this commodity—with some of those involved in the process above described.]

Nitroglycerin Tablets.

AMONG the errors of the last British Pharmacopœia, the ordering of this drug to be dispensed in chocolate tablets is perhaps the worst. Not only is the dosage uncertain, and the manipulation required dangerous, but this

FIG. 2.



method of administration is slower in action and exceedingly expensive; in fact, it is difficult to conceive why the compilers of the last edition of the Pharmacopœia should have gone out of their way to choose so inconvenient and impracticable a vehicle, when the one-per-cent solution of the drug, which has been in general use for a considerable period, was open to them. It is stable, easily gauged, and prompt in action, and has, in fact, all the merits which are conspicuous by their absence in their present formula. The tablets in question are not stamped, and bear no indication of their nature or strength, and mistakes which might be dangerous in their results may easily occur.—*Med. Press.*

On the best kind of Glass for Thermometer Tubing.

IN the course of an extensive series of experiments made by a German Government Commission in conjunction with an establishment at Jena, regarding the rate of alteration in the calibre of thermometer glass-tubing during the period of "ageing" or "seasoning," it has been ascertained that pure potash or pure soda glass is least affected, and undergoes the least amount of change. A mixture of soda and potash glass, however, such as is commonly present in commercial thermometer tubing, is very considerably affected by seasoning. Some time before and after the year 1870, there was a very superior kind of thermometer tubing made in Thuringia (Germany), but this is no longer to be had. At present, the only place where tubing of the least alterability is to be obtained is said to be the "Glastechnisches Laboratorium in Jena."—After *Zeitsch. f. Inst.-Kunde*, 1886, 24.

A SELF-IGNITING BUNSEN BURNER.

ERNST DOBY, of Berlin, has devised an improved burner, which has, besides the gas tube proper, a small lateral supply tube ending inside of the globular cap of the burner, and constituting a small, independent burner giving a very small flame, which is prevented from being blown out by accidental drafts, through the globular protection, in the bottom of which there are holes for the admission of air to cause the flame to issue without smoking. When the main stop-cock of the burner is shut off, the small flame remains burning, and causes the re-ignition of the large flame when the supply is turned on again. The flame of the small burner itself may be made larger or smaller by adjusting small screws situated near the base.—*Chem. Zeit.*, 1885, No. 97.

This kind of burner appears to answer particularly well for connection with certain forms of thermoregulators.

New Color Reactions for Alkaloids.

W. LENZ has studied the behavior of a large number of alkaloids towards fusing caustic potassa, being led to make this examination in consequence

Doby's self-igniting Bunsen burner.

of having previously found this agent to serve as a test of identity for other substances (aloëtin and chrysophanic acid).

The reagent is prepared and manipulated in the following manner. A small quantity of caustic potassa "purified by alcohol" is placed on an inverted crucible cover (for which purpose such covers as have had the porcelain ring or handle accidentally broken off serve quite well), together with a little water, a trace of the substance to be examined (best in alcoholic solution) is added, and the mixture heated at first very cautiously and gradually over a quiet flame, finally to low redness. Under ordinary circumstances, that is, in the presence of traces of most alkaloids, the mass acquires a yellow color, changing gradually to brown or red, and finally becomes carbonized.

It is particularly necessary to avoid the presence of accidental impurities, such as foreign substances (fragments of corks, etc.), as these would lead to erroneous conclusions.

On applying this reaction to a very large number of alkaloids and proximate principles, it was found that only a few of them produced a characteristic color reaction. Among those which *failed* to give any remarkable coloration, and may therefore be regarded as yielding a negative reaction, are the following:

Aconitine (from all kinds of aconite), atropine, berberine, brucine, caffeine, codeine, coniine hydrobromate, digi-

taline, emetine, gelsemine, homatropine, hyoscyamine, hydrastine, meconine, morphine, narceine, narcotine, papaverine, pelletierine, physostigmine, pilocarpine, strychnine, veratrine, ptomaines (obtained from acid or alkaline solutions).

Positive results however were obtained with *quinine*, *quinidine*, and to a certain extent with *cocaine*.

Apomorphine, sabadilline and thebaine, at first produced a faint green color of the melted mass, but this soon changed to yellowish-brown, and could not be confounded with the color reactions produced with cinchona alkaloids. Chinoline tartrate, which had been purchased some years ago, gave the green reaction, but a purer article recently procured failed to show it, whence it may be concluded that pure chinoline (quinoline) is indifferent to the test.

In order to ascertain approximately, the degree of sensibility of the test, the latter was conducted as follows: A piece of pure caustic potassa was heated with only such a quantity of water as was required to keep the mass liquid when heated on a boiling water-bath, and to cause it to congeal when cooled to the ordinary temperature. Drops of the liquefied mass were transferred, by means of a glass-rod, to a number of crucible covers, and definite amounts of highly concentrated alcoholic solution of the alkaloids of known strength added, the cover containing the drop being previously a little warmed, to cause a more rapid evaporation of the alcohol. The mixture was then cautiously heated, and the following appearances were noticed:

Quinine (½ milligramme) colors the melted potassa *grass-green*. At the same time an intense, very agreeable aromatic odor (resembling Spiræa) becomes noticeable, which appears to be *characteristic of quinine*.

[The evolution of an odor was noticed with many proximate principles examined by the author. In the case of some the odor could not be defined; in that of others, notably of quinidine, cinchonine, and cinchonidine, the evolved odor was evidently that of chinoline.]

Quinidine (1 milligramme) colors the mass *grass-green*. On further heating it becomes more yellow, finally brownish. The grass-green color is noticeable even with ½ milligramme of the alkaloid.

Cinchonine (1 milligramme) colors the points of the cooled and congealed mass at first reddish-brown to bluish-violet, and the edges gray. Subsequently, the potassa turns bluish-green, and develops a somewhat pungent odor. With ½ milligramme the reaction is still plainly noticeable.

Cinchonidine (1 milligramme) colors the mass brownish-red, afterwards blue, beginning at the edges; ½ milligramme still produces a transient but plainly visible blue, finally gray tint.

As there are no characteristic [distinguishing] color reactions for the cinchona alkaloids, the above may often be found to be useful criteria.

Cocaine. The melted mass is colored yellow even by the most minute quantities of cocaine, and this yellow color always turns brown. The characteristic color, however, which cocaine imparts to the mass is rose-red, but it is difficult to bring it about and frequently is not obtained at all. When it is successfully produced, it spreads over the whole of the mass, but is often so feeble that it can only be distinguished when carefully watched for. Sometimes a more intense rose-color is obtained with smaller quantities of the alkaloid than with larger. The author generally obtained it when using as little as ½ milligramme of cocaine. He could not ascertain the reason of the uncertain occurrence of the color.

Estimation of Phenol by Means of Bromine.*

LANDOLT, in the description of his gravimetric process for estimating bromine, expressed the reaction between bromine and phenol by the equation:

$$\underset{\text{phenol}}{C_6H_5.OH} + \underset{\text{bromine}}{6Br} = \underset{\text{tribromo-phenol}}{C_6H_2Br_3.OH} + \underset{\text{hydro-bromic acid}}{3HBr}$$

Koppeschaar altered this into a volumetric method of analysis, and in investigating this, the authors found that the action of bromine water, either strong or dilute, on phenol resulted in the formation of tribromophenol bromide $C_6H_2Br_3OBr$ according to the equation:

$$C_6H_5.OH + 8Br = C_6H_2Br_3.OBr + 4HBr$$

(Benedikt had previously discovered that the compound was formed by the action of an excess of bromine on phenol.) The authors also found that during the titration, in addition to the action of the excess of bromine on the potassium iodide, the excess of this salt reacts on the first formed tribromo-phenol bromide, probably according to the equation:

$$C_6H_2Br_3OBr + 2KI = C_6H_2Br_3.OK + KBr + 2I$$

This explains how it was that Koppeschaar's results, based on the correctness of Landolt's equation, were accurate, since in each case one molecule of phenol would react on six atoms of bromine.

The titration of phenol by bromine was found to be available for pure phenol, and that the substitution of the compound, $5NaBr + NaBrO_3$, for the bromine water, as suggested by Koppeschaar, gave still more satisfactory results.

This titration-process is not available for crude carbolic acid or coal-tar oil; for not only do they contain homologues of phenol, which act on bromine, but also it is not easy to remove the whole of the phenol from coal-tar oil by means of water. If, on the other hand, the coal-tar oil itself be allowed to act directly on the bromine, only the surface of the globules is decomposed; hence the attempts made to titrate coal-tar oil with bromine did not yield concordant results. —*The Analyst*, Feb.

* Abstract of a paper by C. Weinreb and S. Boadi in the *Monats. f. Chem.*, 1885, 506.

Determination of Phosphoric Acid.

MUCH has been written about the quantitative determination of phosphoric acid in mixtures, particularly in presence of iron and aluminium, and the use of citrates of alkalies has been recommended for this purpose, with many modifications. Julius Laubenheimer has lately worked out an improved process which has been carefully compared by Dr. Fassbender with the molybdenum process, and has been reported by this chemist to yield perfectly satisfactory results, so that the molybdenum method may be abandoned. The process is as follows:

From 25 to 50 C.c. of the liquid containing the phosphates—in quantity corresponding to 0.1 to 0.2 Gm. of phosphoric anhydride, P_2O_5—is mixed with 10 C.c. of solution of citric acid (500 Gm. in 1 liter), and afterwards with a large excess of concentrated ammonia. When the mixture has somewhat cooled, 15 to 20 C.c. of the ordinary magnesium mixture (see U. S. Ph., p. 392, but preferably containing chloride instead of sulphate of magnesium) is added, whereupon the precipitate of phosphate of magnesium and ammonium will separate in a crystalline condition. The precipitation is hastened by stirring with a glass rod during 1 or 2 minutes. It is best to delay filtering until the following day to insure complete precipitation. The latter may be shown to be complete by taking a little of the filtrate in a test-tube, acidulating with nitric acid, adding molybdate of ammonium, and warming, which must not produce any turbidity. The small quantity of precipitate which settles upon the walls of the beaker and the stirring rod may be detached by rubbing with a rod covered at the end with a small piece of rubber-tubing. The precipitate is first washed with water of ammonia, afterwards with alcohol, and may then be at once ignited in platinum.

When very much iron and alumina are present, the quantity of solution of citric acid must be increased, and is then best doubled (20 C.c.), a correspondingly larger quantity of ammonia being afterwards employed. But after the magnesium solution has been added, the mixture must be stirred for several minutes at least, until the liquid portion appears cloudy. If this is done, the precipitation of the phosphoric acid will be completed within an hour (even in presence of very much iron), and filtration may be proceeded with at once.—After *Chem. Zeit.*, 1885, No. 103.

Terebene.

TEREBENE [see also elsewhere in this number] is the popular medicine of the moment. Dr. Murrell published an article in the *British Medical Journal* of December 12th, in which he stated that he had obtained excellent results in cases of winter cough by the use of pure terebene. The dose he advises is from 5 to 20 minims on sugar. He also administers it as a spray, from one to two ounces to be diffused and inhaled every week. Terebene, he finds also, relieves flatulence and acidity, and combined with equal parts each of oil of cubebs and oil of santal wood, mixed with liquid vaseline and used in an atomizing apparatus, he had found to yield excellent results, not only in winter cough, but also in post-nasal catarrh as well as in improving the tone of the voice. Terebene is a molecular modification of the spirit of turpentine by five per cent of concentrated sulphuric acid and distilled repeatedly.—*Chem. and Drugg.*

Calcium Chloride for Enlarged Glands.

DR. W. CRIGHTON (*Practitioner*, September, 1885) states that in glandular enlargement of the neck in children, where the glands seem massed together, and are almost of a stony hardness, and in which both iodine and cod-liver oil have failed, chloride of calcium will frequently produce the most satisfactory results. After some weeks' use of the chloride, with careful attention to diet and hygiene, there seldom fails to be noticed a softening and separation of the individual glands, and generally in a few months such a reduction in size and complete disappearance in milder cases has taken place as to warrant the term cure to be applied to the case. On the discontinuance of the remedy, however, an increase of size often takes place, necessitating its continuance for intervals of a year or more. Crystallized chloride of calcium should always be prescribed, as the anhydrous salt forms a turbid solution, and has an unpleasant taste. The recognized dose is from 10 to 20 grains and even more, but he has generally used a smaller dose of 1 or 2 grains for young children, and rarely over 12 or 15 for adults. The formula which he uses is 5 ounces of the crystallized salt to 7 ounces of syrup, the dose varying from 5 to 40 minims, according to the age.—*Therapeutic Gazette.*

DETERMINING THE MELTING POINT OF FATS.

C. Reinhardt has examined the various methods heretofore proposed for determining the melting point of fats. Of these he finds only Guichard's method capable of yielding reliable results, if several sources of error are eliminated. The principle of this method consists in this—that a sample of the fat introduced into the end of a narrow glass-tube, the remainder of which is filled with a colored liquid having no solvent or other action upon the fat, will be pushed out of the tube by the column of liquid when melted. This method, however, leads to erroneous results, since the fat will often be retained by capillary attraction even though it be already melted; and further, because there is no prescribed specific gravity for the liquid which is intended to push it out of the tube.

In place of using an indefinite pressure of a column of water, Reinhardt recommends to use indirect pressure which can be exactly regulated. This is accomplished by means of the apparatus here illustrated.

a is a funnel-tube graduated in one-half centimeters and having its zero point below. *b* is a glass-cylinder closed with a rubber stopper, *c* is a glass tube with stop-cock, *d* is a capillary glass tube containing a column of fat about two centimeters high, and *e* is a thermometer. Before connecting the two parts of the apparatus, air is blown through the glass stop-cock *c*, until the water in the funnel-tube has risen in the latter, when the stop-cock is closed and connected with *d* by the rubber tube. The stop-cock is now again opened, and the column of water in the funnel-tube will now perhaps correspond to the height *h*. This latter is read off on the scale and noted; also the height (x) of the column of water in the cylinder is measured, as well as the distance y. [It will be noticed that the level of water in the beaker is somewhat higher than that in the cylinder.]

The beaker glass is now very gradually warmed, until the fat melts, which will then be pressed out of the capillary tube. At this moment the temperature is read off. The column of water contained in the funnel-tube *a* falls to h_1, but rises in the cylinder to the mark x_2.

Now the water-pressure, by which the fat is forced out of the tube, is represented by the following equation, in which p means pressure:

$$p = h - (x_1 + x_2 + y), \text{ or}$$
$$p = h - h_1$$

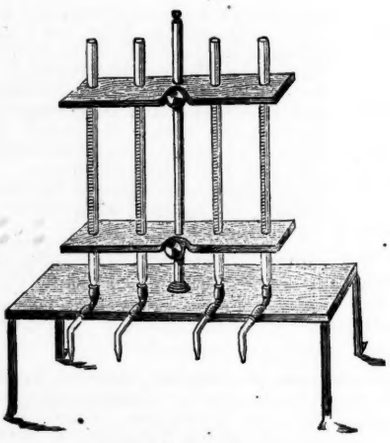
The higher a pressure is applied, the lower will be the melting point observed. Therefore, the very pressure itself introduces an error which may, however, be rendered comparatively small by care. The bore of the capillary tube containing the fat likewise has an influence upon the result. For instance, in taking the melting point of paraffin, with a tube of four millimeters bore and a water-pressure of 11-13 Cm., the melting point was 52° C. On repeating this experiment with a capillary tube, the other conditions being the same, the melting point was between 54 and 55° C.

No matter what method may be employed, the following precautions ought to be observed.

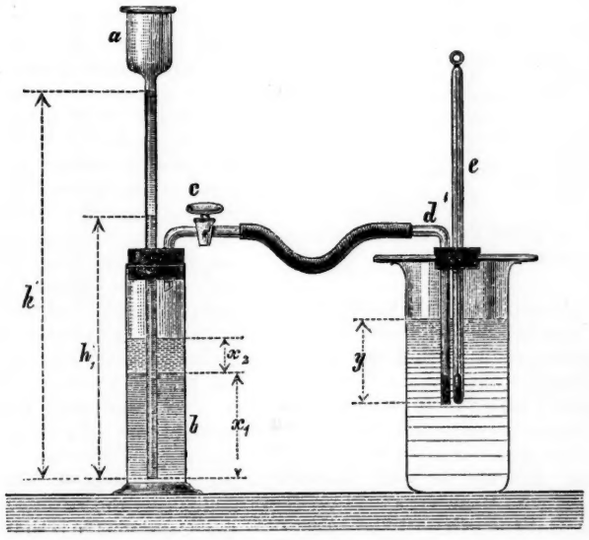
It is best always to use the same beaker and to fill it with the same amount of liquid. The bulb of the thermometer (which should be graduated to $\frac{1}{10}$° C.). and that portion of the tube which contains the fat should always be adjusted at the same level and height over the bottom of the beaker. The column of fat should not be higher than the column of mercury in the bulb of the thermometer. If longer columns of fat are to be used, they should be arranged horizontally, best in a coiled or curved tube. The thickness of the glass of the tube should be the same as that of the thermometer bulb. Warming the beaker is best performed on a plate of asbestos. Capillary and other tubes, up to 4 Mm. bore, after being charged with fat—particularly if this has a low melting point—should be laid aside (together with the thermometer) for one or two days, before taking the melting point.

The glass tubes must be absolutely clean and free from defects. It may be advantageous, but it is not absolutely necessary, to keep the water in the beaker in motion by a curved wire or other arrangement.

The fat to be examined is previously filtered through a dry filter and funnel into a small beaker, in an air-bath of sufficient temperature to keep it liquid. When charging a 4 Mm. glass-tube, the fat in the beaker is melted, the tube is dipped into it to a height of 1 to 1.5 centimeters, the upper orifice closed with finger and the tube withdrawn. It is immediately dipped into cold water, after a short time the finger is withdrawn, and the tube laid aside. For capillary tubes the author uses such as have an external diameter of 7 Mm. and a bore of 4 Mm., and have been bent into a curve.—*Zeitsch. f. anal. Chem.*, 1886, 16.



Weinstein's burette holder.



Determining the melting point of fats.

The Albany College of Pharmacy, at its Commencement on March 1st, granted degrees to ten gentlemen.

BURETTE HOLDER.

Dr. Ludwig Weinstein prefers to arrange his burettes in the manner here illustrated. The burette-tubes pass through two boards or frames adjustable by set-screws, and the holes through which they pass are of such diameter that it requires a slight effort or friction to raise or lower each burette. To the end of each is attached a bent delivery-tube by means of a piece of rubber-tubing. When the liquid in the burette is to be prevented from flowing, the burette is gently pressed down against the table, causing a kink in the rubber-tube. To set it dropping or flowing again, it only need be slightly raised.—*Chem. Zeit.*, 1885, No. 103.

A new Test for the Purity of Cocaine.

Mr. Alexander Bohringer has communicated to us a new test for cocaine, which for its apparent simplicity and accuracy will probably be accepted as a criterion for the purity of this alkaloid.

Take a solution of hydrochlorate of cocaine, and add an equal part of a solution of permanganate of potassium. The mixture should form a fine precipitate of permanganate of cocaine. If the solution is very dilute, the precipitate will form, after a certain time, dark-violet crystals. There is no decomposition of the permanganate of potassium likely to occur in the process, as the precipitate is very constant, and it can be dissolved in water by carefully heating it; while, by heating for a longer period, a decomposition will take place, and peroxide of manganese [manganese dioxide] will be formed. The cocaine subjected to this process should always be in crystals, having a similar form to those of sulphate of magnesium.

Acetophenone has been used by Mairet and Combemale in experiments to determine its power as a hypnotic in doses of 10 to 45 grammes in 24 hours, administered to insane persons presenting more or less excitement. Some of the patients took the drug for eleven consecutive days; others for five or six days. The results impressed experimenters with the inefficiency of the drug for this purpose.

Action of Sunlight on Iodoform.—According to Daccomo, iodoform is completely decomposed by sunlight in the presence of oxygen, but this does not occur in a vacuum or in the presence of other and indifferent gases.

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FRED'K A. CASTLE, M.D., - EDITOR
CHAS. RICE, PH.D., ASSOCIATE EDITOR

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EDITORIAL.

ON several occasions we have recommended that pharmacists should co-operate in collecting and publishing definite information respecting the frequency with which certain articles enter into physicians' prescriptions. Without such information it is extremely difficult for any committee charged with pharmacopœial revision to decide upon the articles to be retained in or excluded from the pharmacopœia; and when we consider the extent of the territory of the United States of America, and the rapid increase in the number of remedial agents, the importance of some such method of collective investigation cannot fail to be apparent.

Two or three persons have already reported the results of labors in this direction, and the latest and most important contribution of this nature is that by Mr. Albert E. Ebert, of Chicago, made to the Illinois Pharmaceutical Association, at its last meeting.

Nine collaborators in various portions of the State, of which Mr. Ebert was one, reported the results of their examination of 15,734 prescriptions by over 807 physicians (three reporters did not give the number of physicians whose prescriptions were examined). The total number of articles enumerated embraced about 1,130, and the report shows in an admirable manner the wants of a large portion of the physicians of Illinois.

There is no work which could be undertaken by the various State pharmaceutical organizations, with reference to the revision of 1890, which would be of greater value than the collection of similar information.

SOME time ago, the announcement was made that Dr. Williamson and Mr. Springmuehl discovered the real active principle of hops, to which the name "hopeïne" was given. This pretended principle has been recently examined by several French chemists and physicians, who reported that it is either identical with, or, at least, exactly similar to, *morphine*. The first to announce this was Dr. Dujardin-Beaumetz, who gave the results of experiments made by Mr. Bardet for the firm of Adrian & Co. The latter firm had obtained the hopeine through Thos. Christy & Co., of London. Subsequently it was ascertained that quite large supplies of hopeine were offered in the English market, in spite of the supposed scarcity of the new alkaloid. The manufacturers of the article are the Concentrated Produce Company. On examining original packages of the article as obtained from Thos. Christy & Co. and the manufacturers themselves, it was found that Christy's sample had a pronounced sweetish odor, like that of oil of wintergreen, and also a burning taste such as is produced by essential oils. The sample obtained from the manufacturers had a strong odor of hops. It appears, however, according to the account given in the *Chem. and Drugg.* (February 15th), from which we abstract this article, that the difference did not originate with Thos. Christy & Co., who sold the original article merely with substitution of their own label.

The Concentrated Produce Company insists upon the statement that hopeine is made from hops. Messrs. Christy & Co. state that the article was brought out some years ago under the name "hopeine," but was given up. Also, that E. Merck, of Darmstardt has the exclusive sale of it on the Continent at the present time. The article is reported to have had a large sale in Germany without any complaints having been made. The editors of the *Chem. and Drugg.* have also received a statement from Dr. G. V. Weissenfeld on the relation of hopeine to morphine, from which the following is an abstract, and which defends the existence of hopeine as a chemical individual:

"While several well-known chemists have pointed out the great resemblance existing between morphine and hopeine, it is clearly shown by the investigations of Smith, Williamson, and Roberts that these two alkaloids are not identical.

"To point, like Bardet, to the color tests as proof of the identity of the two alkaloids is as unjustifiable as it would be to maintain that atropine, hyoscyamine, and daturine are identical because they show similar points of resemblance.

"It may be, of course, that morphine is actually present in *Humulus Lupulus* as well as in the poppy, just as caffeine is found in *Caffea arabica*, *Thea chinensis*, *Paullinia sorbilis*, etc.

"Some of Bardet's reactions are not even characteristic of morphine, and if the crystals obtained by sublimation are examined under the microscope, the difference between hopeine and morphine will at once become apparent, and the same result is obtained by exposing a drop of the alcoholic solution to free evaporation.

"The point of solution [should probably read: melting-point.—ED. AM. DR.] of hopeine is under 100° C.; that of morphine over 120° C. The point of sublimation is under 130° C. for hopeine, over 160° C. for morphine. The smell of hops does not properly belong to hopeine, but is caused by traces of a decomposition product of the alkoloid. The characteristic smell of hops, although expelled from hops by the drying process, may be revived by heating it with sulphuric acid.

"The sediment caused in concentrated solutions by tannic acid is soluble in [the case of] morphine by the addition of a drop of hydrochloric acid, and not soluble in [the case of] hopeine.

"There are also great physical differences between morphine and hopeine, especially in their action on the pupil. The former always causing myosis, while hopeine, if applied to the eye of a cat in small doses, causes dilatation; in large doses the mydriatic action on the human eye is also apparent. Crystallized hopeine only should be used in experiments."

[Dr. Weissenfeld reports, in the *Pharm. Rundschau* (Prag), that pure crystallized hopeïne has the composition, $C_{18}H_{20}NO_4.H_2O$; the hydrochlorate, $C_{18}H_{20}NO_4.HCl.3H_2O$; and the sulphate, $(C_{18}H_{20}NO_4)_2.H_2SO_4.4H_2O$. The composition of morphine is: $C_{17}H_{19}NO_3.(H_2O)$. According to this, the two alkaloids, morphine and hopeïne, would seem to differ but little in ultimate composition. To us, however, this does not appear to have been positively demonstrated as yet, inasmuch as the differences in percentage composition are within the usual variations of an ultimate analysis made on one and the same substance. The percentage composition of the two alkaloids, crystallized, would be:

	hopeïne. $C_{18}H_{20}NO_4.H_2O$	morphine. $C_{17}H_{19}NO_4.H_2O$
C	65.06	63.95
H	6.02	5.95
N	4.22	4.39
O	19.24	20.06
H_2O	5.42	5.61

Dr. Weissenfeld, however, mentions a number of other differences between the two substances, which, if confirmed, would form proofs of their separate existence.—ED. AM. DRUGG.]

The Concentrated Produce Company assert that hopeine is, with them, a by-product, their chief manufacture being a condensed beer, for which they use the American wild hops.

Steps have been taken to obtain invoices of the latter, by Christy & Co., with a view of having the question thoroughly examined. [It seems to us of sufficient importance to be investigated in this country likewise.—ED. AM. DR.]

WE should have called attention to the fact, in connection with the item on "Milk of Magnesia" in our last issue, that the title is the property of the Chas. H. Phillips Chemical Co., and that the process will not give an article similar to the one entitled to be called by that name.

The process by which the result *is* obtained is likewise secured by patent. One of the proprietors described the process to us in detail several years since, and it is not similar to the one published.

TWENTY-EIGHT gentlemen received diplomas at the commencement exercises of the Maryland College of Pharmacy, held at the Grand Opera House in Baltimore, on the 18th of March.

THE eighth annual meeting of the Ohio Pharmaceutical Association will be held in Springfield, on Wednesday, June 2d. It is expected that the central position of Springfield, and the preparations which have been made for the meeting, will insure an unusually large attendance of members and others interested in pharmacy. Those who may find it to their interest to take part in the exhibit should communicate with Theodore Thorp, Esq., the local secretary.

WE are indebted to Mr. Ed. R. Beckwith, of Petersburgh, Va., the Secretary of the Virginia Pharmaceutical Association, for the information that the Pharmacy Bill had passed the Legislature, after four years of labor, and at the date of his letter (March 3d) awaited the Governor's signature.

The friends of the measure are entitled to much praise for the persistence with which they have worked for the achievement of this desirable end.

MR. BECKWITH also writes that the fifth annual meeting of the State Pharmaceutical Association will be held at Alexandria, May 11th, 1886. Exhibitors should communicate with Mr. Edgar Warfield, the Local Secretary.

LATER information states that the Virginia Pharmacy Law was approved by the Governor on the 3d of March, and the following gentlemen were appointed a Board of Pharmacy for the State: J. W. Thomas, Jr., of Norfolk; T. Roberts Baker, of Richmond; Robert Brydon, of Danville; Edgar Warfield, of Alexandria; and E. R. Beckwith, of Petersburg.

THE Supreme Court of the United States has recently rendered its decision upon the legality of local taxation of commercial travellers, as follows: "We think that the act in question operates as a regulation of commerce among the States in a matter within the exclusive power of Congress and that it is for this reason repugnant to the Constitution of the United States and void."

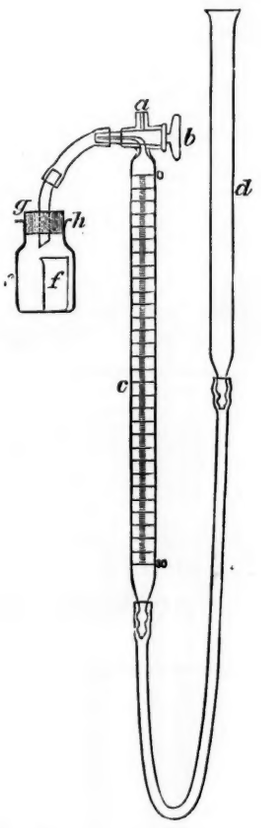
A RECENT law enacted in Georgia requires all preparations of morphine to be dispensed in scarlet paper, with a scarlet label having the name of the contents in white letters.

The California College of Pharmacy will commence its next session on the 5th of this month and will continue it into September.

The College of Pharmacy of the City of New York held its fifty-sixth annual commencement on Tuesday, March 30th, an address by the Hon. John R. Brady being the leading feature of the occasion, next to the granting of degrees.

AN IMPROVED NITROMETER.

PROF. G. LUNGE describes, in the *Ber. d. Deutsch. Chem. Ges.* (1885, 2,030), an improved form of his *nitrometer*, which may be used for the estimation of urea and similar nitrogenized substances. The apparatus consists of two tubes, one (*d*) not graduated and slightly funnel-shaped at the top, the other (*c*) being accurately graduated into 30 C.c., each divided into fifths, and provided at its upper end with a stop-cock perforated as shown in the cut. The end of the stop-cock is connected, by means of rubber tubing, with a small bottle in which the reaction is made to take place. If the apparatus is to be used for urea, for instance, the proper quantity of urine is measured into the vessel (*e*), and the corresponding amount of solution of brominated soda [for each C.c. of urine, about 10 C.c. of a solution made by dissolving 10 Gm. of caustic soda in water to 125 C.c. and adding 2. 5



C.c. of bromime.—ED. AM. DR.] into the smaller vessel (*f*). The two glass-tubes are fixed in suitable holders at equal heights, and enough mercury is poured into the open tube to cause it to rise exactly to the mark 0, when the open tube is raised as high as shown in the illustration. At this elevation it is then fastened. The rubber stopper (*g*) is now inserted into the generating bottle, and any pressure of the air thereby produced within the latter removed by opening the stop-cock (*b*) so as to communicate with the outer air (*a*). It is then again turned. If the level of the mercury is now still exactly at 0, the tube (*d*) is again lowered to its former position, whereby a rarefied space will be produced over the surface of the mercury in the burette, allowing a more rapid escape of the gas produced by the reaction in the bottle. This is started by inclining the bottle so that the reagent will mix with the urine. When no more gas is given off, and the apparatus has again acquired the ordinary temperature of the room, the open tube is adjusted at such a height that the level of the mercury in both tubes is exactly alike, and the mark at which the mercury stands in the tube is then read off. [In the case of urea, 1 C.c. of gas—nitrogen—at the ordinary pressure and temperature, corresponds to 0.0027 Gm. of urea.—ED. AM. DR.]

Prof. Lunge adds that, if a lesser degree of accuracy is permissible, water may be used instead of the mercury.

A NEW BURETTE.

J. WALLENSTEINER, of Stuttgart, has patented a new form of burette, the novel feature of which is shown in the annexed cut. Into the lower end of the burette tube proper there is fused a conical recess *b*, and a special extension piece *a* is fused on the end of the burette itself. The contents of the burette flow through the glass tube *c* whenever the lateral orifice, situated near the upper end of the latter, is made to coincide with the aperture b′ in the conical recess. The glass tube *c* is, of course, carefully ground into the recess. The object of the extension piece a′ is to avoid warming the liquid in the burette by the heat of the hand when turning the drop-tube *c*.

Osmate of Potassium.

E. MERCK, of Darmstadt, prepares this salt, as it appears to have advantages over the free osmic acid which, besides being very irritating to the air passages, is also very hygroscopic. Osmate of potassium has the composition $K_2OsO_4.2H_2O$. Both the acid and this salt are used for the same purposes. Neuber has employed them with great success hypodermically, in peripheric neuralgia, and Mohr against rheumatic sciatica, the latter using a 1 per cent aqueous solution. In goitre, subcutaneous injections are recommended by Szumann and Eulenburg, and in sarcoma and leucoma by Delbastille. Recently it has been recommended by Wildermuth for the treatment of epilepsy, with simultaneous administration of bromide of potassium. He gave it internally, in doses of $\frac{1}{64}$ grain, altogether $\frac{1}{4}$ grain per day, in pills made with white bole, and coated, if possible. When too long exhibited, the remedy may produce disturbance of the digestive organs.

The Kentucky Coffee-Bean.

PROF. R. BARTHOLOW, of Philadelphia, reports the preliminary results of experiments with the *Gymnocladus canadensis*, or Kentucky coffee-bean, a concentrated aqueous extract having been employed. The toxic properties of the drug have already been observed, flies having been stupefied by it, and these experiments, reported in the *Amer. Journ. of Med. Sci.* for April, show that the drug has powers analogous to those of Calabar bean.

Fluid Extract of Quebracho is said by H. J. Wegner (*Amer. Journ. of Pharm.*) to be capable of relieving the asthma caused in many persons by handling powdered ipecac.

Benzoate of Cocaine is said by A. A. Bignon, of Lima, to be extremely soluble, easily crystallizable, and retains the characteristic odor of coca. In comparing its effects with those of the latter, it was found that their duration is much longer.

A College of Pharmacy is to be established in Buffalo, N. Y., in connection with the medical department of the University. Prof. R. A. Witthaus, formerly a professor in the University of the City of New York, has been elected President of the faculty.

APPARATUS FOR RAPIDLY DETERMINING THE CORRECT VOLUME OF A GAS.

THE correct measurement of gases is no longer a task which belongs exclusively to the professional chemist or physicist, but has become a necessary operation in various technical laboratories, as well as in pharmacy and in medicine. Since Prof. Eykman has published his method of assaying spirit of nitrous ether by measuring the amount of nitric oxide which is eliminated from a given amount of the liquid (NEW REM., 1882, 139), several other methods have been successfully employed for the same purpose, all of which, in order to yield correct results, require a correction to be made in the volume of the gas eliminated, depending upon temperature and barometric pressure. The estimation of urea by the hypobromite process, which is so commonly practised, also requires that a correction should be applied, though this is often neglected, under the belief that the difference from the true amount is but trifling. It makes a vast difference however, when the extremes of temperature in the different seasons of the year, and the varying elevation of different parts of a country over the sea-level are taken in consideration. The proper application of the correction always involves a careful reading off of the thermometer and barometer, and considerable of calculation. All this may be obviated by making use of the ingenious plan proposed by Clemens Winkler, which involves only the adjustment of a standard instrument *once for all*, and the mere inspection of which at any subsequent time furnishes simple data for making corrections.

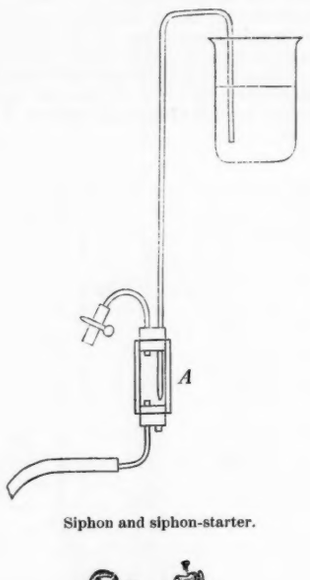
The requisite apparatus (see cut) consists of a stand having two arms. The lower one of these is stationary and supports the measuring vessel *A*. The other arm can be adjusted higher or lower, and carries an open glass tube, protected at its upper end by a dust-cap. The two tubes are connected below by stout rubber-tubing. The measuring tube *A* has a capacity of exactly 100 C.c. from the glass-stopper on top to the mark 0 on the scale (near the middle), and the graduation extends upwards to 5 C.c., and below to 25 C.c., so that volumes between 95 and 125 C.c. may be correctly read off to the tenth part of a cubic centimeter. These two extreme volumes would correspond to 100 volumes of normal air, brought to 0° C. and a pressure of 800 millimeters in the former case (95 C.c.), and to 30° C. and 700 M. in the latter case (125 C.c.), so that any pressure or temperature likely to occur in making measurements of gases in the same room where this standard apparatus is kept, is provided for.

The apparatus may be charged with water to the level shown by the dark portion, but it is preferable to use mercury. It is adjusted as follows: The glass stop-cock (which must be ground and greased so as to close absolutely tight) is opened, and a few droplets of water allowed to fall into the tube, if mercury is used as filling. If water is used, this is, of course, unnecessary. The object of the water is to saturate the within contained air with aqueous vapor, for nearly all gases that require measurement are collected over water, and are, therefore, likewise saturated with moisture. A quantity of mercury approximately corresponding to the volume shown in the cut is then introduced through the other tube, and the apparatus, together with an exact thermometer and barometer, set aside in a room (without heat or fire). After a few hours, or better still, after 24 hours, the ratings of the barometer and thermometer are carefully taken, and the volume then calculated which would be occupied by 100 C.c. of air (considered in its normal condition) under the conditions of pressure and temperature then prevailing. The calculation is made by the following formula:

$$V = \frac{(760 - 4.5)\ 100 \times (273 + t)}{273\ (B - f)}$$

in which V = volume sought, t = observed temperature, B = observed barometric pressure in millimeters, and f = the tension of aqueous vapor at the observed temperature [to be taken from Regnault's tables].

The stop-cock being then still open, the movable tube *B* is raised or lowered until the level of mercury in the other tube stands exactly at the mark



Siphon and siphon-starter.

Apparatus for determining volume of a gas.

found by calculation, and the stop-cock is then permanently closed. The confined volume of air, corresponding to 100 C.c. in its normal condition, will expand or contract with every change of temperature or pressure, and the rate of expansion or contraction is represented by the number of C.c. which the mercury occupies below or above the zero mark.

If, therefore, any measurements of gases (over water) by any other forms of apparatus are made in the same room, it is only necessary to inspect the above described standard. Should it happen that the mercury stands at exactly 0, no correction of the volume of any gas then found would be necessary. If it is above or below, a simple calculation (by proportion) will indicate the true volume.—*Ber. Deutsch. Chem. Ges.*, 1885, 2,535.

SIPHON AND SIPHON-STARTER.

A SIMPLE contrivance to cause a siphon to flow is shown in the accompanying illustration. It is intelligible without explanation, but the remark may be added that the length of the wide tube *A* should be so chosen that no risk may be run of aspirating or sucking the liquid through the outer tube bearing the pinch-cock before the latter can be closed.—After *Zeitsch. f. Anal. Chem.*, 1886, 139.

Production of Quicksilver in California.

ACCORDING to Mr. J. B. Randol, of San Francisco, California produced 32,073 flasks (of 76½ lb.) of quicksilver in 1885, selling at $28.50 to $32.00 per flask. 21,400 of these flasks were the product of the New Almaden mine. The ten other mines made, altogether, 10,673 flasks. The profits and production of the metal have decreased of late years, and it is stated that the American mines now known will be exhausted by the year 1900.—*Sci. Amer.*

Kava-Kava as the Source of a new Local Anæsthetic.

DR. LEWIN, of Berlin, recently announced to the Medical Society of Berlin that the resinous substance obtained from *Piper methysticum* possesses a property like that of muriate of cocaine in inducing local anæsthesia. This resin is soluble in alcohol, has an aromatic taste, and when applied to the tongue leaves a sense of pricking or burning, which soon passes into local insensibility. The conjunctiva is similarly affected, and when applied to the eye its effects are quite persistent, and followed by no anatomical lesion. The sensitiveness of the iris to light is not affected. Hypodermic injection of the solution causes insensibility of the tissues with which it comes in contact.

Hydrobromate of Hyoscine has been tried as a hypnotic in the Willard Asylum for the Insane, and, according to Dr. P. M. Wise and other members of the medical staff, it "disposes to sleep indirectly after several hours, when given in sufficient doses to produce its marked physiological effects, such as muscular relaxation and, occasionally, stupor; but that it cannot be regarded as a hypnotic in its proper sense." In their experience it does not possess the value of hyoscyamine in any of the uses to which it is ordinarily applied.

Fattening Following the Use of Chewing Gum.—The *Macon* (Ga.) *Messenger* says: Twenty years ago the rule was that Southern women were thin and delicate; it is not the rule now. Southern women are not physically equalled in all North America. Any physician who is as well informed as he ought to be will tell you that this is true. This change is due to the habit of chewing gum. . . . As to Southern men, they are as thin and gaunt as they ever were, and so they will remain until they cease to chew tobacco and chew gum.

The Chicago College of Pharmacy held its nineteenth commencement on the 4th of March and awarded diplomas to sixty-eight candidates. A meeting of the alumni, officers, and members of the College followed, during which a supper occupied a large share of attention.

Soluble Citrate of Magnesium can be prepared by dissolving 100 parts of citric acid in 25 parts of water, by the aid of a water-bath, adding 64 parts of carbonate of magnesium, and drying the product.

NOTES ON PRACTICAL PHARMACY.*

[Continued from p. 43.]

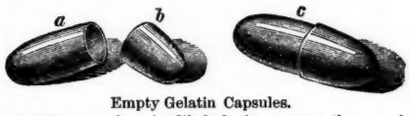
GELATIN CAPSULES.

GELATIN CAPSULES, (or, simply) CAPSULES, *Capsulæ gelatinosæ*, are special forms of envelopes for bad-tasting drugs, and also for other drugs which are to be administered to such patients as show great aversion to taking medicine. There are two kinds, those which are already charged with medicines and sold as such, and those which are sold empty. Among the first-mentioned class are capsules containing copaiba, cubebs, cod-liver oil, castor oil, etc. These capsules, made and filled at the factory, have an oval shape, a length of 1.0 to 1.5 centimeters, are entirely closed, and of a shining exterior. Their preparation *ex tempore* is not practicable. The mass from which capsules are to be made consists of gelatin, mixed with gum-arabic, honey, or glycerin. If the physician prescribes a drug to be dispensed in gelatin capsules, EMPTY CAPSULES are used (if the drug prescribed is not contained in the capsules of commerce). The lid *b* is spread over, on the inner side [only along the edge], with gum-mucilage by means of a brush, and placed on the capsule *a* after the latter is filled. The substance with which the capsules are filled must contain no water. Capsules should be placed in layers on clean cotton or soft paper, and dispensed in pasteboard boxes.

The composition of the mass from which capsules are to be made may vary considerably, but it should always be such that the drug for which it is intended as a covering should not thereby be subjected to any dissolving or decomposing influence, and the mass should also be composed of easily digestible and inert substances. The following ingredients and proportions, prescribed by the French Pharmacopœia, are those commonly used:

S C

Hollow Gelatin Capsules with cover. S, shape for introduction into the rectum.



Empty Gelatin Capsules.

a, part of the capsule to be filled; *b*, the cover; *c*, the capsule closed.

Capsulæ Gelatinosæ.

1 gramme. 2.5 grammes. 5 grammes.

Elastic Capsules of Castor Oil or Cod-liver Oil.

Hard Capsules.

℞ White gelatin	30	parts.
Powdered gum arabic	30	"
Powdered white sugar	30	"
Honey	10	"
Distilled water	100	"

Dissolve on a water bath.

Soft Capsules.

℞ White gelatin	50	parts.
Powdered gum arabic	15	"
Powdered white sugar	15	"
Glycerin	12.5	"
Distilled water	80	"

Dissolve on a water-bath.

Into the mass, while it is moderately hot and still fluid, oval or olive-shaped plugs of tinned-brass or iron (capsule moulds), previously rubbed with olive oil, are dipped. These are set upon thin staves and in the holes of a wooden disk. After the coating has cooled, they are to be dipped into the mass once or twice more. After the lapse of about a minute, the wooden disk is turned alternately backwards and forwards, and in various directions, until the coverings of the metal plugs are as nearly as possible of a uniform thickness, and are tolerably cool. The wooden disk is then put in a moderately warm place.

As soon as the covering is dry enough, it is drawn off from the plug by a sudden, dexterous movement, and the portions of the gelatin-mass projecting beyond the olive-shaped plug is cut off with shears. The little hollow bodies are then placed in the holes of the wooden disk, with the open ends up, and filled with the fluid drug by means of a syringe like those used for subcutaneous injections, provided with a fine canula, or by means of an apparatus having a jet like a wash-bottle. If the filling is too thick to flow readily, it must be made thin enough by being heated.

The openings of the capsules are now to be closed by means of a drop of hot gelatin-solution applied with a hair pencil. The closed capsules are afterwards to be dipped, with the closed ends uppermost, to about a quarter of their length in the gelatin-solution and left to dry in a very moderately warm place.

ELASTIC CAPSULES of various sizes, filled with castor-oil or cod-liver oil, are also kept in the shops.

Although these are very large, it is yet possible to swallow them because of their elasticity. These capsules should be kept in cotton, and so dispensed. The cotton must be very clean and white. Gelatin capsules in spherical form and of somewhat limited capacity, are called GLOBULES, as has already been said. This form is chosen for very volatile substances, like Ether (hence Perles d'éther). These globules are made, according to Thevenot, in the following manner. A portion of the mass, consisting of gelatin, gum-arabic, sugar, and honey, is rolled out flat and laid on an iron plate of the thickness of 0.6 centimeters, in which are holes 1 centimeter wide. The still pliable mass by its own weight sinks into these holes and forms in each a hollow hemisphere. After the depressions have been filled with a mixture of equal parts of ether and alcohol, a second plate is laid on the capsule-mass and on this plate an iron plate, whose holes correspond exactly to those in the first one, is pressed by means of a suitable screw-fastening, and the whole apparatus is so turned that the upper plate comes over the under one, and concavities are formed here as in the former case. The apparatus is then placed between two iron plates, and forcibly pressed together.

There is now a special apparatus for this manufacture, the *Capsulateur* of the Apothecary Viel (Tours) the arrangement of which does not conform to the process above described. The principle of which this arrangement is to compress tubes, made from the capsule-mass and filled with the fluids, into the form of capsules or globules, by means of pincers made specially for for this purpose.

[NOTE OF ED. AM. DRUGG.—An apparatus patented in Germany by A. Bergholz (No. 2,448) may be employed for this purpose. Pure gelatin having been first soaked in water, then melted with 6 to 10 parts of glycerin, is spread upon perfectly level plate glass in such amount that, when dry, it will form a sheet of the desired thickness. It is kept at a uniform temperature of 68°–77° F., and will dry up, in 24 to 48 hours, to a clear, transparent, and elastic film. This is now cut into pieces corresponding to the surface of the metallic moulds of which we gave an illustration some time since. Each mould consists of an upper and lower piece; the latter is provided with semi-globular or semi-oval depressions into which corresponding projections of the upper piece accurately fit. A sheet of the elastic gelatin of proper size having been placed upon the lower half of the mould, the latter is warmed to 40° C. (= 104° F.), and the upper half of the mould then pressed on it. After a few minutes the latter is removed. The proper quantity of the medicine to be inclosed having been deposited in each depression, a second disc of gelatin, previously treated in the same manner, is placed over it so that the corresponding halves are exactly situated over each other, and the whole is placed under the press, the upper part of which contains a plate, warmed to 40° C. (= 104° F.), which fits the shape of the capsules exactly. Pressure is now applied, whereby the two halves are united and immediately afterwards the upper part of the press is exchanged for another, provided with circular or oval cutters which, when depressed, cuts out the completed capsule from its connection with the remaining sheet.

The filling of empty capsules, at the prescription counter, with various medicines, is a task frequently occuring. When dry powders are to be filled in capsules, in large quantities, some form of capsuling apparatus may be used, for instance that of Mr. Thos. Whitfield, of Chicago, which we have already described on page 68 of NEW REMEDIES for 1879, and the construction of which is shown by the cut [which see]. The filling of capsules is performed by this apparatus in the following manner.

The plunger at the bottom of the tube beneath the funnel being drawn down by means of the little knob at its bottom, the cap-portion of a capsule is placed, mouth upwards, upon its upper end through the aperture in the front of the tube. The hold on the knob being then released, a concealed spring causes the plunger to rise, and the capsule is pressed firmly against a shoulder in the tube just below the funnel. The requisite amount of powder having been put into the funnel, the long portion or body of the capsule is dropped upon it, mouth downwards, and pressure is made upon the finger plate forming the highest part of the apparatus. This causes a second plunger to descend, and by means of a spiral groove in the sheath through which its guide-rod travels, it is slightly rotated as it descends until it comes directly over the centre of the funnel and is applied to the rounded base of the capsule. Continued pressure rams the capsule home. The first plunger is now again drawn downwards and the filled capsule rolls out.

There are more simple forms of capsule fillers, one of them being that devised by Franklin E. Davenport, of Auburn, Indiana. This consists of a

* The basis of this series of papers is the last edition of Hager's "Technik der Pharmaceutischen Receptur." The editors have, however, found it desirable to omit certain portions which relate to matters of practice peculiar to Germany and to insert others which are more characteristic of American customs. Editorial additions are inclosed in [ ].

The use of the original text has been kindly granted by Dr. Hager.

funnel flattened at one side (*c*) to help in taking up the material. The funnel has a tube *b* attached, both being made of one piece without seams. The tube is inserted into the empty capsule, the material is poured in the funnel and pushed into the capsule by means of a plunger, *a*. There are as many sizes of funnels and plungers as there are sizes of capsules.

Reymond's capsule-filler consists of three blocks of wood, one of which contains holes just large enough to permit the capsules being inserted one-half of their length. Another block fits over this, and is perforated with holes corresponding to that in the first block, so that the whole of each capsule is within one of the holes. A third block fits upon this, into which funnel-shaped holes are bored, which are large enough to receive all the powder. The latter is pushed into the capsules by means of a plunger or tampon, and the capsule afterwards closed in the usual manner.

When no apparatus is at hand, and capsules are to be filled by hand, an empty capsule of the same size as is to be filled may be placed upon one scale-pan, together with the proper weight of the material to be introduced. The powder being placed upon a piece of smooth paper, one of the empty capsules is charged with powder by means of a tampon, or better, a small flat spatula. The cap being put momentarily on, it is laid on the empty scale-pan, and if it weighs too much or too little, the excess or deficiency is corrected by withdrawing from or adding to the contents.

This method may seem tedious at first sight, but it will be found to work extremely well, particularly if large quantities of capsules are thus to be filled, for instance, such as contain sulphate of quinine in a dry state. Of course, this must be first reduced to a very fine powder. In handling capsules by hand, many persons will soon observe that their fingers become sticky, and that the exterior of the capsules, when they have been touched by the fingers, becomes damp and liable to retain some of the powder. This is, of course, due to the perspiration of the skin. All trouble from this source may be overcome either by using gloves or by dipping the ends of the fingers previously into collodion. The impermeable coating thus produced will absolutely prevent any moisture from affecting the outsides of the capsules. When filled, each capsule should be carefully brushed off with a camel's-hair brush. As a rule, there is no need of gluing the cap of the capsule, though this may be done if it fits loosely.]

REMEDIES FOR EXTERNAL USE.

These are prepared in a manner similar to that mentioned under Mixtures. Volatile oils or alcohol holding resins in solution must always be added to fluids containing less alcohol, or such as are of a watery nature, and this process must not be reversed, so as to secure as fine a subdivision of the precipitate as possible.

If two substances which enter into a mixture produce precipitates, or cause some substance to separate by coming in contact with each other, they should always be mixed in a *diluted* state. If tinctures, gums, or emulsions enter into the mixture, they should be added to the saline solution before the final mixing takes place. By this means heavy or thick-flaked segregations are avoided.

SALTS OF LEAD mixed with salts containing TANNIN, or with sulphates, yield heavy precipitates. With OPIUM, a heavy separation is likewise produced. Corrosive sublimate produces heavy precipitates with GUMS, OPIUM, and substances containing albumen, as does also nitrate of mercury (*Liq. Hydrargyri Nitratis*).

Physicians deem it desirable to have these particles held in suspension; this may may often be effected by a trifling addition of gum arabic. If, for instance, camphor in solution is to be added to a watery mixture, in which the camphor would be precipitated again, an addition of gum arabic will be quite effectual, and the separated camphor will remain in suspension for several minutes after the mixture is shaken.

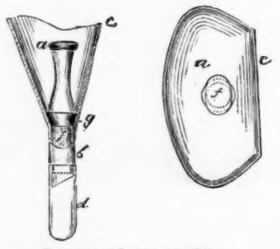
℞ Hydrarg. chlor. corros. ....gr. 15
Spirit. camphor.....fl. ʒ 1
Aquæ destill.....fl. ʒ 10
M. D. S. Lotion.
(Nota Receptarii :)
Mucil. acaciæ.....gr. 45
Addita.

Herein the corrosive sublimate is first to be dissolved in most of the water; the *spir. camph.* to be mixed separately with 45 grains of mucilage of gum arabic and a little water, and then added to the sublimate solution.

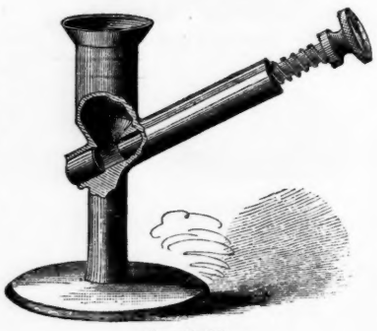
EYE-WASHES AND INJECTIONS.

Eye-washes, *Collyria*, and injections, *Injectiones*, resemble each other very much as regards their composition, and may, therefore, be discussed together.

Every substance that is insoluble or



Davenport's capsule filler.



Capsule filler.

difficult of solution, which is an element of a fluid intended to be used as an eye-wash or as an injection, must under all circumstances be triturated as fine as possible, first by itself, and then with a suitable portion of the fluid, and this even when it is taken from a stock apparently already in a fine division.

Every palpable substance causes pain in the eyes. On this account solutions of salts for eye-washes should not be prepared by making hot saturated solutions, because on cooling small sharp crystals are precipitated; for example:

℞ Boracis pulv.... ....10.0 [gr. 150]
Solve in
Aquæ Rosæ .....100.0 [fl. ʒ 3½]
D. S. Eye-wash.

At the ordinary temperature, 1 part of borax is dissolved by 12 parts of water. The finely-powdered borax is mixed with the water, shaken repeatedly, and the undissolved portion separated by straining or filtering. The word *solve* shows that the physician requires a solution. On the other hand, should the prescription read thus:

℞ Boracis pulv... ....10.0 [gr. 150]
Aquæ Rosæ .....,100.0 [fl. ʒ 3½]
M. D. S. Injection.

a different mode of preparation is demanded, as it clearly calls for a mixture. The powdered borax is to be triturated in a mortar as finely as possible, first by itself and then with the addition of some water mixed with the remaining cold water, and thus dispensed.

Cuprum aluminatum * (*Lapis divinus*) does not make a clear solution in water, because the camphor is always liberated. If the prescription does not direct straining or filtration, both of these processes are necessarily excluded. In order, therefore, that the liberated particles of camphor which float on the upper surface of the fluid be rendered as fine as possible, the *Cuprum aluminatum* should first be dried and then subjected to continued trituration with the addition of a few drops of water. An addition of mucilage would cause the camphor to be held in suspension. For this purpose from two to three times as much gum arabic as *Cuprum aluminatum* is added to the mixture.

The mixtures for eye-washes and injections sometimes produce precipitates. The dispenser must be careful that these do not become granular.

Solution of chloride of iron or sulphate of iron with acetate of lead, or sulphate of zinc or alum with acetate of lead, in solutions with mucilage, require careful mixing in order to obtain, as far as possible, a uniformly opaque mixture. If but one of these salts, with mucilage of gum arabic, or of quince, is to form part of the mixture, both the salt and the gum are first to be diluted with water, each by itself, if the prescription so permits. The two diluted substances should then be mixed. If two or three of these salts with gummy fluids are to be constituents of a solution or a liquid, each of the salts, as well as the gum, is to be diluted with water separately before being added to the mixture.

The following will serve as an example:

℞ Zinci Sulphatis,		
Plumbi Acetat., āā.	2.0	gr. xxx.
Ammon. Chloridi,		
Aluminis.....āā.	1.0	gr. xv.
Mucil. Acaciæ....	5.0	f. ʒ iss.
Aquæ Rosæ.....120.0		f. ℥ iv.

M. D. S. Shake before using. Inject three times daily.

Here the alum and sulphate of zinc are to be dissolved, together with the chloride of ammonium, in 60.0 (2 fl. oz.) of rose water, and the mucilage added. The acetate of lead is then dissolved by itself in the remaining 60.0 (2 fl. oz.)

Both solutions are then to be mixed, the latter being poured into the former.

℞ Zinci Sulphat.....	0.5	gr. 8.
Plumbi Acetat....	1.0	gr. 15.
Ext. Opii.....	0.4	gr. 6¼.
Acaciæ..... ..	10.0	gr. 150
Aquæ destill.....	200.0	fl. ℥ 6½

M. l. a. (lege artis). S. Injection.

Here the sulphate of zinc and also acetate of lead are to be separately dissolved, each in 50.0 (f. ʒ xvi.) of water, and then the extract of opium and acacia are to be dissolved in 100.0 (f. ʒ xxvi.) water. The solution of sulphate of zinc is then mixed with the latter, and after a thorough shaking the solution of acetate of lead is added to it.

Both of the solutions of salts may also be first mixed with one-half of the gum solution containing opium extract, and finally these two fluids mixed together. In this way solutions are often obtained which are but slightly turbid, while neglect of this

* *Cuprum aluminatum* is prepared by melting together 16 parts each of sulphate of copper, nitrate of potassium, and alum (each in powder) in a porcelain capsule, then removing from the fire and adding a mixture of 1 part each of powdered camphor and powdered alum, pouring out and breaking the mass in pieces.

rule will result in the formation of a fluid with a considerable precipitate.

Solutions of nitrate of silver are dispensed in dark-colored bottles.

SOLUTIONS FOR HYPODERMIC INJECTIONS.

Hypodermic or subcutaneous injections were introduced in comparatively recent times. The instrument for effecting this operation is a small syringe, which in this country is called merely "hypodermic syringe," but on the continent of Europe usually named after one of the originators: "Pravaz's [or Lüer's, or Leiter's] syringe." The instrument is too well known to require description here.

Hypodermic or subcutaneous injections require to be as clear fluids as are obtainable, and the use of water of the greatest possible purity, and which is entirely free from vegetable matter or germs. [Hager recommends doubly distilled water.] Every liquid to be used as an injection, when not perfectly clear, must be filtered directly into the vessel in which it is to be dispensed. It is indispensable that the vessel, the funnel, and the filtering paper employed be absolutely clean and free from dust. If this precaution is not observed, abscesses are apt to supervene at the sites of puncture.

Complaints are often made that inflammation and suppuration of the punctured places results from morphine injections, which do not occur at another time to the same patient, although the identical morphine is employed. The physician may attach the blame to the preparation of morphine, while the apothecary may prefer to believe that the patient has a predisposition to suppurating sores. The reason in both cases is the quality of the water, and the idea that distilled water must always be pure water is demonstrated to be erroneous.

[This is not always the case. A very prolific source of suppurative abscesses after hypodermic injections in the impure condition of the point or canula of the syringe itself. Unless very carefully cleansed after each injection, minute particles of blood or tissue may and will adhere to the syringe, particularly just inside of the orifice, as may often be verified by examining with a lens. A fresh injection administered by such a syringe is very apt to dislodge the adhering impurity and thus introduce a morbific germ which is sure to result in an abscess.—ED. AM. DR.]

If glycerin is to form part of an injection it must be as nearly pure as possible, or otherwise it may act very injuriously.

Substances which do not yield clear solutions, as for example many extracts, should not be filtered, but should be dissolved in perfectly pure water, and the solution passed through a pellet of glass-wool [or purified cotton].

PAPER-FILTERS require to be cleansed before being used for filtration and should be filled two or three times with distilled water, and after the last water has drained off, the filtration of the fluid for injection may be proceeded with.

[NOTE BY ED. AM. DRUGG.—The preservation of hypodermic solutions or similar liquids is often a matter of some importance. While it is the rule to prepare hypodermic solutions freshly when wanted for use, yet it is often inconvenient to do so, and it becomes necessary to keep on hand a moderate quantity of such a solution. When the substance in solution is an alkaloid (such as morphine, atropine, hyoscyamine, cocaine) or other delicate organic substance, the utmost care must be used in the preparation of the solution, so as not to introduce any substances that might either form a sediment or cause the development of fungi. To prevent the latter, various substances may be used, but only with the concurrence of or by direction of the prescriber. Among these substances are boric acid, salicylic acid, carbolic acid, and the like. The most efficient and the least objectionable of all preservatives is *chloroform water*, that is, distilled water saturated with chloroform, about two minims being required for each fluidounce. Hypodermic injections of morphine (Magendie's solution), solution of cocaine for use in the eye or hypodermically, solution of atropine, etc., if made with pure distilled water, carefully filtered through pure washed filtering paper, and then saturated with chloroform, will generally keep for a very long time. Filtration, of course, can only remove mechanical impurities; the chloroform, however, prevents the development of germs or bacteria. Such solutions must be kept in well-stoppered bottles, to prevent the loss of chloroform. These solutions have been practically tested in the public hospitals, and the chloroform has at no time been found objectionable.—ED. AM. DR.]

LOTIONS, EMBROCATIONS, SOLUTIONS FOR EXTERNAL USE, GARGLES, ETC.

These are solutions, mixtures, decoctions, infusions, etc. Generally the same rules hold good, regarding their preparation, as apply to similar preparations for internal use. There are a few combinations, however, which require special attention.

CHLORIDE OF LIME, *Calx chlorata*, is to be triturated with the vehicle, and the watery mixture freed from the coarse, sandy particles by decantation. If *Liquor calcis* is prescribed it is understood to mean a filtered solution of one part of chloride of lime in 8 to 10 parts of water prepared cold. This latter should be dispensed in dark-colored bottles.

CALOMEL, *Hydrargri chloridum mite*, should not be mixed by mere shaking, with a fluid of which it is to form a part, as for instance lime-water, but must first be triturated in a mortar with a portion of the vehicle.

CORROSIVE SUBLIMATE, lime-water, and opium solutions. According to the order in which these three substances are mixed, fluids of different constitution are obtained. If corrosive sublimate is first put into a bottle and the tincture of opium or solution of extract of opium added, and last of all the lime-water, a solution results which does not yield a yellowish-red precipitate of oxide of mercury. This precipitate, however, is desired by the physician. The sublimate must therefore be first shaken with the lime-water and the opium added last of all.

If CORROSIVE SUBLIMATE is prescribed with EXTRACT OR TINCTURE OF OPIUM in aqueous solution, the opium ingredient must first be mixed with one-half of the water, and the corrosive sublimate dissolved in the other half, and the two liquids then mixed together.

Tincture of opium, extract of opium form insoluble combinations with most metallic salts. They are consequently only added to solutions of metallic salts when diluted with water.

In many other cases also, the dispenser will guard against undesirable results if he carefully marks the order in which he adds each constituent to a mixture. Should he not do this, it may easily happen that when a repetition of the prescription is wanted, it may differ materially from the first. It is trouble wasted to enlighten the patient as to the reasons for the change.

Phosphorus is dissolved by being heated in a test-tube into which it has been put with the solvent, by being repeatedly dipped into hot water and agitated in it. If ether is the solvent, the solution is effected by (cold) maceration. Care must be taken that no undissolved particles of the phosphorus remain suspended in the liquid, to prevent which, after the solution has become cool, the dissolved portion is carefully decanted from that which is undissolved or remains as sediment. In using turbid solvents, it is safe to put the phosphorus into a large test-tube, and to cover it with so much of the solvent that it cannot be acted upon by the air. The bottom of the glass is then heated by means of hot water until the phosphorus melts, when it is made into little balls by cautious shaking. The remainder of the menstruum is then added, frequently shaken up, left to settle for one to two hours, and decanted.

At a medium temperature 1,000 parts

Absolute ether dissolve	about	10	parts
Officinal ether	"	7.5	"
Spirit of ether	"	1.5	"
Absolute alcohol	"	2.5	"
Alcohol (90 per cent)	"	1.	part
Any fixed oil	"	15.	parts
Petroleum or ethereal oils	"	20.	"

of phosphorus.

(To be continued.)

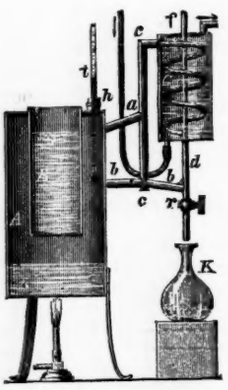
Detection of Mineral Oils in Fatty Oils.

THE following process has been proposed by Focke in *Repert. der Anal. Chem.:* 20 Gm. of the sample are mixed with 8–10 Gm. of caustic potassa and 50 C.c. of alcohol [and heated on a water-bath for a short time. —ED. AM. DR.]; the alcohol is then evaporated off, the mass dissolved in water and then decomposed by hydrochloric acid. As soon as the separated fatty acids form a clear layer, the mixture is cooled, the acid aqueous liquid is drawn off with a siphon as much as possible, and the fatty acid washed with fresh portions of cold or lukewarm water, until the washings cease to show an acid reaction. The fatty acids now remaining —which may contain mineral oils or fats—are dissolved in ether, the ethereal solution is filtered, the ether removed by distillation or evaporation, and the residue weighed. Since it is impossible to obtain an absolutely constant weight, it is best to cease heating the residue (with the object of drying) as soon as not more than a few centigrammes are lost by drying during fifteen minutes.

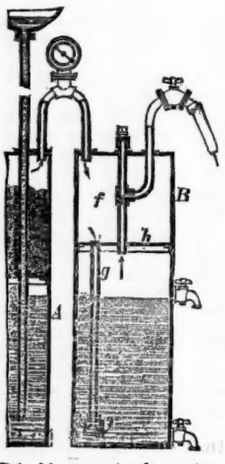
About 10 Gm. of the mixed fatty acids are now weighed in a capacious flask and dissolved in 50 C.c. of alcohol. A little solution of phenolphthalein is then added, and afterwards strong solution of soda (1 in 3) in drops, until a slight excess of soda is present. Before the mixture has time to congeal, 100 C.c. of low-boiling benzin (not over 80° C. or 176° F.) are now added, the whole thoroughly mixed by shaking, and the alcoholic and benzin solutions allowed to separate as distinct layers. When this has occurred, 500 C.c. of water are added, the contents again mixed by repeated gentle agitation, and the flask set aside. When the aqueous soap-solution has separated, it is siphoned off as completely as possible, and the remaining benzin solution treated with another volume of 300 C.c. of water. The former will now refuse to separate completely; in order to obtain a clear benzin solution, as much as possible of the aqueous solution is removed, and 10 C.c. of alcohol then poured in a thin stream and with circular motion through the benzin solution. After five or ten minutes the latter will become perfectly clear, and the larger portion of it can be poured off, while the remainder may be collected by a separating funnel. In place of the 100 C.c. of benzin, only 80 to 85 C.c. of clear benzin solution will usually be obtained. This is poured into a tall beaker placed inside of a broader flat dish, and the benzin evaporated with a gentle heat. Any residue left will be mineral fat or oil.

A NEW THERMO-REGULATOR.

In our last number we described a drying apparatus recommended by Victor Meyer, in which nearly constant temperatures are produced by the introduction of liquids of known boiling-points. The condensation of the vapor of the boiling liquid is there effected by a plain upright tube (see page 53). That this may sometimes involve some loss of vapor, at least with low-boiling liquids, is not improbable. It is, of course, easy to connect the tube with an upright condenser by which all loss can be avoided. There is one other drawback connected with that apparatus, namely, that the temperature cannot be varied, after the boiling-point of the liquid has been attained, without changing the liquid. These drawbacks—if they may be called so—are avoided in the thermo-regulator constructed by Prof. A. Fock, of Berlin. This consists of a large outer and a smaller inner vessel, made of copper, and having only three outlets, one at *h*, for the insertion of a thermometer and the introduction or withdrawal of a liquid, and the other two, being the tubes *a* and *b*, connecting with the upright condenser. The outer vessel *A* is charged with the liquid, the boiling-point of which is to determine the temperature. The inner vessel is charged with a non-volatile liquid of high boiling-point, such as olive oil or paraffin. When a definite temperature is to be attained, such as may be produced by a liquid of definite boiling-point, the stop-cock at *r* is closed, and the condensed liquid all made to run back into the vessel *A*. The vapors will at first rise into the condenser through both *a* and *b*, but as soon as condensed liquid flows down through *d* and *b*, the vapors will ascend through *a* alone. When a temperature is to be attained for which no special homogeneous liquid is available, petroleum, or better, definite fractions of this may be employed, and enough of this be distilled off (the stop-cock *r* being open) until the temperature of the remainder has risen to the desired point. The stop-cock is then closed, and the condensed vapors will flow back into the vessel. In this way any desired degree of temperature may be more accurately regulated than by any other method.



Fock's thermoregulator.



Brinck's apparatus for washing carbonic acid gas.

The interior vessel, *B*, may also be used as a hot air-bath by emptying it of its contents. It is a much better air-bath than if the liquid in *A* were actually in contact with it. In the latter case, variations of three to five degrees would be caused by local overheating due to confined pressure, and other causes. As the apparatus is constructed now, the walls of the inner vessel are constantly surrounded by vapor of an equable temperature.—After *Zeitsch. f. Instrumentenkunde*, 1886, 26.

Chinojodin.

As a supplement to the article on this new antiseptic, contained in our last number (page 46), we have to add that the substance is an addition product of chinoline (quinoline; C_9H_7N), the molecule ICl (chloride of iodine) having been joined to it. Its composition is, therefore, C_9H_7NICl. It is light-yellow, micro-crystalline, insoluble in water, and difficultly so in alcohol, ether, and other solvents. It strongly resembles chinoline in odor and taste.

IMPROVED FUNNEL HOLDERS.

Gerich & Pitschinsky, of Vienna, have introduced a new style of funnel holders, which are not only preferable to others on account of the conical shape adapted to support a funnel with steadiness, but also on account of the ease with which they may be kept clean, as they are made of glazed porcelain. They are fastened by a handle, *S*, into an iron arm, *H*, which may be attached to a retort-stand. The interior of the funnel holders shows three longitudinal ridges, which prevent the close contact of the whole funnel surface with the interior of the holder.—After *Chem. Zeit.*, No. 103.

Gerich & Pitschinsky's improved funnel holder.

Japanese Fish Oil.

According to a French Consular report, in the *Mon. des Produits Chim.*, this article, which has lately been imported into England in enormous quantities, is the product of an industry carried on principally in the neighborhood of Yokohama by native fishermen. The oil is obtained from herrings and sardines, which cannot otherwise be utilized for want of salt, or means of transport to the nearest market, and is extracted by means of a most primitive modus operandi, the fishes being cut up and thrown into the boiling water, and the oil removed as it rises to the surface. After boiling the fish, the remaining oil is pressed out.

It frequently happens that through want of labor the fish are allowed to remain in the water until decomposed, and this accounts for the repulsive smell and dark color of many shipments. The crude oil is sent to Tokio and Yokohama in wooden barrels, containing about 1½ cwt., lined with paper impregnated by glycerin and the juice of unripe Kaki fruit (*Diospyros Kaki*). The oil is refined by heating it to 122° or 140° F. in cast-iron boilers, and then allowing it to cool in wooden tubs. When cold it forms three layers—an upper of clear liquid oil, a central of solid grease or fat, and a bottom layer of water, refuse, and albuminous matter. The upper layer of oil is drawn off in barrels for shipment, but the fat is remelted, filtered, and poured into cases while hot. —*Chem. and Drugg.*

APPARATUS FOR WASHING CARBONIC ACID GAS.

The direction of the arrows in the generator, *A*, indicates the current of the gas. The wash-apparatus consists of a vessel divided by a diaphragm, *h*, into two separate portions. The lower one contains the wash-water, and may be filled or emptied by means of the faucets on the side. A tube, *g*, leads from the diaphragm to near the bottom. The washed gas passes into the tube arising from the diaphragm and thence to wherever it may be conducted. The object of this rrangement w ill be readily understood. If the gas delivery were to take place through a continuous tube passing to the bottom of the wash-liquid, the latter would flow back into the generating vessel whenever the pressure in the latter would diminish. With the present arrangement, the wash-liquid would be sucked up into the upper compartment, and the risk of its passing into the generator is greatly diminished. This apparatus has been patented in Germany by H. Brinck, of Cologne.

Use of Cocaine Followed by Toxic Symptoms.

Several more cases have been recorded in which the use of cocaine has been followed by toxic symptoms, and one case, by Dr. Schilling, where amyl nitrite was successfully administered as an antidote (*Med. Chron.*, Feb., p. 397). In this case six drops of a 20-per-cent solution had been injected into the gums of a woman aged 28, to facilitate the extraction of a back tooth. After the tooth had been removed, and the patient was about to leave, her countenance became rigid and she appeared to faint, and in spite of the administration of stimulants she became unconscious. The eyes remained widely opened, and ophthalmoscopic examination showing contraction of the retinal arteries, it was reasoned that there was contraction of the arteries of the brain, and the experiment was made of administering nitrite of amyl. After the inhalation of three drops from a cloth the woman's face flushed and she spoke, and a second and third inhalation at intervals of a few minutes resulted in complete restoration.—*Pharm. Journ.*

Bow's Liniment is a Scotch remedy for chest complaints, and is chiefly used for children slightly colded. The formula is:

Opium	1 oz.
Hard soap	1½ "
Compound camphor liniment	8 "

Digest for several days, and filter.

Instead of this, a mixture of opium liniment (2 parts), and solution of ammonia (1 part) is sometimes sold.—*Chem. and Drugg.*

Horehound and Linseed Syrup.—Boil together for ten minutes 1 oz. horehound, 2 oz. linseed, and 1 pint of water. Strain when cold, and dissolve 1 lb. of sugar in the decoction. The product should measure 30 oz.; to this add 5 oz. ext. glycyrrhiz. liq., 1 oz. ess. anisi, 1 oz. spt. chloroformi, and 3 oz. proof spirit. Shake well, and allow to stand for a day before bottling. —*Chem. and Drugg.*

QUERIES & ANSWERS.

Queries for which answers are desired, must be received by the 5th of the month, and must in every case be accompanied by the name and address of the writer, for the information of the editor, but not for publication.

No. 1,690.—**Terebene, Terpene, Terpin, etc., etc.** (several subscribers).

As the answer to this query takes up more than the usual amount of space, we have given it as a separate article, headed: *On Terebene, Terpene, Terpin, and Allied Bodies*, on page 63 of this number.

No. 1,691.—**Lanolin** (M. E. and others.)

Whether the name *lanolin* is protected by a trade-mark or not, we cannot say. From a rather acrimonious correspondence, published in the *Pharm. Zeitung*, between Prof. Oscar Liebreich, of Berlin, and Mr. J. D. Riedel, of same place, in which the former attempts to show the utter worthlessness of a "purified wool-fat" put on the market by the latter, and in which the latter carries on a determined defence, we glean the fact that *lanolin*, a mixture of purified wool-fat and 30 per cent of water, was invented by Dr. O. Braun, who obtained a patent upon his process of purifying wool-fat in 1882.

Regarding the price, we are informed by one of the importers that it will be sold at eighty cents per pound.

No. 1,692.—**Gold-Bronze** (J. W. B.).

This may be prepared in the following manner: Melt 2 parts of pure tin in a crucible, and add to it, under constant stirring, 1 part of metallic mercury, previously heated in an iron spoon until it begins to emit fumes. When cold, the alloy is rubbed to powder, mixed with 1 part each of chloride of ammonium and sublimed sulphur, and the whole inclosed in a flask or retort which is imbedded in a sand-bath. Heat is now applied until the sand has become red-hot, and this is maintained until it is certain that vapors are no longer evolved. The vessel is then removed from the hot sand and allowed to cool. The lower part of the vessel contains the gold-bronze as a shining gold-colored mass. In the upper part of the flask or retort chloride of ammonium and cinnabar will be found.

No. 1,693.—**Sulphate of Copper in Cones** (Ed. W.).

There are several ways in which cones or sticks of sulphate of copper may be prepared.

1. Selected crystals, free from fissures, are put into a lathe and turned into cones, a rasp being used as tool. This requires care and practice.

2. Grind properly shaped crystals upon a slowly turning wet grindstone, holding the crystal so that the base of the cone will look towards you and the pointed end away from you. This is the easiest way.

3. Reduce crystals of sulphate of copper to powder, moisten with a little water and heat in a porcelain crucible or capsule until the mass is melted. Roll it out quickly into cones or sticks.

4. Mix ten parts of finely-powdered sulphate of copper and two parts of finely-powdered borax, moisten with a little water and roll out into sticks or cones. Dry them in a lukewarm place. If the two powders are rubbed together in a heated wedgewood mortar, the mass becomes so plastic that it may be formed into cones without difficulty. Sometimes, however, it "sets" very quickly. In this case a little water may be added.

5. The preceding may also be melted together in suitable forms and allowed to set.

No. 1,694.—**Algin** (Ett.)

This interesting substance, of which we have given a very full account in our volume for 1885, page 146, and which promises to be of wide applicability, forms the subject of an English patent (No. 13,433, Oct. 11th, 1884) granted to the discoverer, Mr. E. C. C. Stanford, F.C.S., of Dalmuir, Dumbartonshire, who will probably be able to supply the article in quantities.

Algin appears to be a remarkable substance. It is really an acid, forming salts with bases. The alginates of alkalies and of magnesium are soluble, nearly all the remaining, insoluble. Some of them have characteristic colors, the copper-salt being blue, the iron salt brown, etc. The alginates of the alkalies may be used for stiffening fabrics; the magnesium salt as a mordant; many metallic alginates in the preparation of water-proof fabrics; those of the alkaline earths for artificial bone; those of iron, cobalt, copper, nickel, and chromium for artificial horn (colored); the sodium and ammonium salt, mixed with ammonical solution of shellac, as a substitute for gutta-percha, etc.

No. 1,695.—**Herbarium of Medicinal Plants** (B.).

You will probably succeed in obtaining the herbarium specimens of American medicinal plants by applying to Mr. M. E. Hyams, of Statesville, N.C. European specimens may be obtained among other sources from Mr. A. Vigener, apothecary in Biebrich on the Rhine, with whom you might correspond. From a recent paper by Prof. A. Tschirsch, of Berlin, printed in the *Pharm. Zeitung* (Jan. 23d), we see that a Mr. Buysman, of Middelburg, Netherlands, has commenced to issue a collection of medicinal plants, which seems to excel anything of the kind ever attempted before. It is published in series comprising 10 plants, each being represented by a faultless dry specimen, and the flowers and fruit of each being separately furnished, with the details of each. The plant itself is mounted upon paper; such parts as would suffer by drying are preserved in alcohol, and contained in an accompanying vial. Such parts as permit drying are inclosed in a paper-capsule, or are mounted in Canada balsam on a slide. The seeds, for instance, are always together; the sepals and petals, according to their color, mounted upon light or dark-colored paper, the male and female organs also separate, and so that they can be easily detached from the paper to permit closer inspection. The stigmas, anthers, ovules, and other minute objects, are mounted in Canada balsam, so that they may be examined under a lens. This collection enables the beginner to study medicinal plants morphologically even in winter. It is stated that any desired plants will be furnished in the above manner by Mr. Buysmann.

No. 1,696.—**Ageing of Cordials, Perfumes, etc.** (Metropolis).

Numerous processes have been proposed for "ageing" or "seasoning" freshly prepared artificial liquors and cordials. Of course, there is no process equal to that of actually and literally doing what the term "ageing" implies, namely, to set the liquid aside, properly protected, until it has acquired the qualities desired. It is well known that recently distilled or recently compounded liquids, particularly if they contain volatile and odorous ingredients, require more or less time until their components become sufficiently blended to prevent any of them to predominate over the other. If the temperature of the room in which the vessel is stored does not vary much, and if the vessel is not agitated or moved from time to time, it requires much longer than if the temperature is subject to periodical changes—warm and cold—and if the container is occasionally shaken. A notable example of the efficacy of either of these influences, or of both combined, is presented by the rate at which certain liquors will age when passing through the heat of one or more summers, or when carried on one or more voyages at sea.

Among the expedients used for hastening the seasoning of such compounds, there is probably none which is better than the judicious application of heat. If the liquid be inclosed in tight containers, with as little air as possible, and it be then raised to a temperature of 24° to 30° C. (74°–86°F.), a notable acceleration of the seasoning will already be observed. But if the heat be pushed to 60°–70° C. (140°–158° F.), and maintained for ten to twelve hours, the liquid will be so thoroughly seasoned that it requires only two or three weeks further rest to pass as "aged."

Though our correspondent has not referred to perfumes, such as essences, handkerchief extracts, colognes, etc., in his letter, we may add that these liquids may likewise be ripened by the cautious application of heat, precautions being taken that nothing is dissipated.

No. 1,697.—**Hypnone** (Several inquirers).

This new hypnotic, which has long been known as a chemical substance, but the physiological properties of which have only recently been discovered by Dr. Dujardin-Beaumetz and G. Bardat, is not likely to displace the other sleep-producing substance to any great extent. Though it may be a powerful hypnotic, yet it has a very disagreeable taste, somewhat recalling that of creasote, and can only be administered in capsules. It may also be given in oil in which it is soluble, and which appears to be a better vehicle, since the substance, by itself, is quite irritant. More recent experiments of Mairet and Combemale appear to show that it is, properly speaking, not a hypnotic, but produces a condition only remotely resembling sleep. However this may be, it will require further study to decide the merits of the substance.

Hypnone is a name of convenience for the proper chemical name, *acetophenone* or *acetyl-benzol*. This substance belongs to the class of ketones, that is, those organic compounds which contain the group CO combined with two (either identical or different) monatomic alcoholic radicals, either of the fatty acid series or of the aromatic series. In the special case of *acetophenone*, the group CO is associated with *benzyl* (the group C_6H_5, derived from benzol: C_6H_6), and with methyl (CH_3). It may therefore be called *benzyl-methyl-ketone*, or, since the group C_6H_5 is more appropriately considered as *phenyl* (from phenol: $C_6H_5.HO$), it may be, and in fact is usually named *phenyl-methyl-ketone*. Further, since the groups $CO.CH_3 = C_2H_3O$ are also comprised under the single name *acetyl*, the above compound has received the name *acetyl-benzol*. It is prepared by distilling a mixture of benzoate and acetate of calcium, the reaction being as follows:

$$\underset{\text{calcium benzoate}}{Ca(C_6H_5.CO_2)_2} + \underset{\text{calcium acetate}}{Ca(CH_3.CO_2)_2} = 2\underset{\text{acetophenone}}{(C_6H_5.CO.CH_3)} + 2\underset{\text{calcium carbonate}}{CaCO_3}$$

There are various other methods by which it may be obtained.

When pure, it forms large crystalline laminæ melting at 20.5° C. (68° F.; it is, therefore, liquid at any temperature above this; according to Staedel & Kleinschmidt; see Beilstein, *Org.*

Chem., 1667), boiling at 202° C. (395.6° F.), and having the spec. gr. 1.032 at 15° C. (59° F.).

When bromine (1 mol.) dissolved in carbon disulphide is gradually added in the cold to acetophenone also dissolved in carbon disulphide, and a stream of dry carbonic acid gas be passed through the mixture, the bromine displaces one atom of hydrogen in the methyl group (CH_3) and forms monobrom-acetophenone, or simply called: bromacetophenone. This substance crystallizes with great facility, is insoluble in cold or boiling water, but very easily soluble in alcohol, ether, and chloroform. It is remarkable for its property of violently exciting tears in the eyes. Possibly it may turn out to have some useful physiological effects.

No. 1,698.—**Crude Animal Oil and Dippel's Animal Oil** (L. & Co.).

The crude animal oil, or more correctly "crude animal volatile oil" is a by-product in processes where animal matters containing nitrogen are subjected to high heat. It is not always collected, being sometimes allowed to run to waste; but where considerable quantities are regularly obtained (as in the manufacture of yellow prussiate of potash or of animal charcoal), it is collected and disposed of for various purposes.

In its crude state, it is a brownish-black, but slightly viscid, non-transparent liquid of a very disagreeable, burnt, or fetid odor, a sharp alkaline taste, and a strong alkaline and disagreeably bitter taste. It is lighter than water, and only partially soluble in it. Of alcohol, it requires 3 parts for solution.

Dippel's animal oil is the preceding after being rectified. It has the synonyms: Oleum animale æthereum (rectificatum), Oleum Cornu Cervi rectificatum, Oleum animale Dippelii.

The crude oil is first distilled from a retort standing on a sand-bath, with a moderate heat, as long as a thin liquid passes over, which amounts to 30 or 40% of the original oil. Tae distillate is a thin, nearly colorless oil of disagreeable odor which was formerly used as "Dippel's oil" without further purification. It should be still further purified, however, which is best done by heating it in a retort with 4 times its volume of water, over a free flame. The steam carries over about one-half of the oil, so that the final yield is about 15–20% of the crude oil originally employed. The oily distillate floating upon the water must be separated immediately, and transferred to small vials which must be completely filled, well stoppered, and kept under water.

The crude animal oil contains various volatile substances, among them chinoline, pyrrhol, pyridine, picoline, lutidine, methyl-, ethyl-, and propylamine, etc. When rectified, the pyridine, picoline, lutidine, and amine bases remain mostly behind in solution in the water of the retort, while the first-mentioned ones (and some others) pass over. It is owing to the presence of these bases, that the oil soon becomes brown when exposed to light and air.

This is the substance from which iodol is said to be prepared. See our preceding number, p. 45.

No. 1,699.—**Kaskine** (Several Inquirers).

We have received several communications inquiring about the substance sold under the name of kaskine, and advertised as having been used with great success as a substitute for quinine, in prominent hospitals and by members of the medical profession.

Regarding the nature of the article in question, we have to say that it appears to be, according to Dr. Frederick Hoffmann, editor of the *Pharm. Rundschau*, nothing else than white sugar in fine granules. We have no reason to entertain any doubt of the correctness of this statement, since we have ourselves failed to find in it any trace of other substances. The parties interested in its sale evidently had made up their minds that the substance needed no careful weighing nor any special manipulations of the dispensing pharmacist, since they accompany each bottle by a little wooden cup to measure out the doses. This method of excluding the services of the pharmacist also diminishes the risk of having undue attention drawn to the remarkable statement made on the label that *kaskine* is derived from *bitumen*, a statement which any one having had a training in chemistry would denounce as nonsense.

As to the claims of the Kaskine Company, that the substance has been used in certain hospitals of New York City, one of the editors of this journal, who has official charge of all the medical supplies furnished to the public hospitals belonging to the city, desires to state that no kaskine has ever been purchased for any of the public institutions, nor has any kaskine ever passed through his hands, among the medical supplies, either purchased or sent as free samples. It is quite possible that samples of it have been sent to some member of the medical staffs connected with the institutions—just as hundreds of other samples are annually sent or handed to them privately.

We are requested by those members of the Medical Board of Bellevue Hospital, whose names appear on the circulars of the Kaskine Company—Profs. A. L. Loomis and F. R. S. Drake—to state that the use of their names has been wholly unauthorized, and that legal proceedings have been commenced against the offending parties.

One of our correspondents is a physician who says that he has accepted, during the last few years, many new remedies—under various oddly sounding names—without any suspicion as to their bona fide character. He mentions kairine, thalline, pelletierine, and antipyrin, and says that new chemicals follow each other so rapidly in modern therapeutics that the busy practitioner has no time—even if he had the ability—to study their chemical properties or to assure himself of their legitimacy, being compelled to rely upon the reports of specialists in pharmacology or of professional chemists.

Having had occasion, however, to try a sample of the article, he speedily discovered its utter uselessness as a remedy in malarial affections, and having failed to find any mention of it in the current medical or chemical literature, he made up his mind that it belonged to the large class of nostrums which exist and flourish by advertising.

To us the name kaskine appears to have been very appropriately chosen for the proximate principle usually put up in sugar-"casks."

No. 1,700.—**Tonga** (N. O.).

When *tonga* was first put on the market, some years ago, as a specific for neuralgia, a good deal of mystery surrounded the drug. The firm which claimed the exclusive control of it, did not divulge its origin and even succeeded in establishing its legal right to the name or trade-mark "tonga." It was, however, shown that the drug, which was derived from the Fiji Islands, consisted of the inner bark of *Premna taitensis* (Nat. ord. Verbenaceæ), and the stem of *Raphidophora vitiensis* Schott (Nat. ord. Aroideæ), which latter has been shown by Brown to be identical with *Epipremnum mirabile* Schott.

Compare NEW REM., 1882, pp. 55, 162, 211.

The word *tonga* has been applied to various plants in other countries, without it appearing that the name has been carried from one place to the other. It is such a facile name or word, that it may well have originated spontaneously in widely different countries. We have found it applied to the following, besides the neuralgic remedy spoken of above:

1. *Tonga* is the Peruvian name of a beverage prepared from the fruits of *Datura sanguinea* R. et P. (= *Brugmansia bicolor* Pers.), the "blood-red thorn-apple," a native of Peru and Colombia. This tonga is used by the native inhabitants in a diluted condition, as a soporific. The concentrated "tonga" appears to be a powerful excitant, since it is stated to produce attacks of mania. It is related that the priests of the sun-temple at Sagomoza, the seat of the Indian oracle, chewed the seeds of the above plant for the purpose of obtaining inspirations (*Rosenthal, Synopsis plant. diaphor.*, 8vo, Erlangen, 1862, p. 453).

According to Prof. Hieronymus, this beverage, which is called both *tonga* and *manga* in Peru, is prepared from the seeds of *Datura Metel* L.

2. In Proyart's History of Loango, Kakongo, etc. (Paris, 1776; in Pinkerton's Collection (London, 1814), vol. xvi., 554), it is stated that "*tonga* is the name of an oblong fruit of the size of an egg, which incloses a quantity of pippins of the size of a lentil. From 50 to 100 grow upon one stalk 2 or 3 feet high. The *camba* differs from the *tonga* only by being flat instead of round. The fruit grows in Provence; it is there called *berengenne*."

This is evidently the *Solanum esculentum* L. (or *S. Melongena*), which is called in some parts of Provence *beringène;* in Spanish *berinjena;* Portuguese *berinjela*. (See also Nemnich, Wörterbuch, p. 1,318, where the word is spelled *tongu;* and the word camba appears as mecumba.)

It is remarkable that the word *tonga* should thus have been employed by the natives of Peru and of Africa to denote closely allied plants, both possessing narcotic properties; and that the same word should have been employed in the Fiji Islands to designate a domestic remedy [at least, so it is reported] having anodyne properties likewise. However, in the latter case we are in doubt about the antiquity of the term, and suspect that it is comparatively modern, having probably some connection with the geographical name of the Tonga group of islands—at no great distance from the Fiji group—the larges tof which is Tonga Tabu or "holy (tabu) island (tonga)."

No. 1,701.—**Quebracho** (Boston).

The sample of quebracho bark you sent us is from *Aspidosperma Quebracho* Schlechtendahl, and is, therefore, the kind which has been found to be medicinally valuable. If a pharmacognostic examination is impracticable, as, for instance, when the bark is powdered, the following test may be applied, which, according to George Fraude, is characteristic of the alkaloid aspidospermine.

Boil 5 Gm. of the finely-cut or powdered bark with about 25 C.c. of coal-tar benzin of low boiling-point for about five minutes, filter hot, and shake the scarcely-colored filtrate with about 10 C.c. of very dilute sulphuric acid. Separate the aqueous solution containing sulphate of aspidospermine, add ammonia in excess, then 10 C.c. of ether, and shake. Separate the ethereal solution, evaporate it (in a test-tube), then add to the residue a little water, 3 or 4 drops of sulphuric acid and a very minute quantity of chlorate of potassium, and boil. The perchloric acid thus generated produces an intense fuchsine-like color.

The term *quebracho* signifies "breaker," and is supposed to refer to the hardness of the wood, which is apt to break the axe that is used to fell the tree. The name is, however, applied to a number of different trees, chiefly to the following:

1. *Aspidosperma Quebracho* Schlechtendahl. Domestic name: *quebracho blanco* ("white quebracho"). Nat. ord. Apocynaceæ, a tree growing to the height of 50 feet, and to a diameter up to 3 feet. *Hab.* Brazil and Argentine Republic, also some portions of Chili.

2. *Loxopterygium* (or *Quebrachia*) *Lorentzii* Grisebach. Domestic name: *quebracho colorado, qu. negro* ("colored or black qu."), from the darker color of the heart wood. Nat. ord. Anacardiaceæ, attaining as large a size as the preceding. The wood of this tree is exceedingly difficult to hew or plane, and is therefore used wherever extremely hard wood is preferable.

The wood of this tree has been found by Dr. Penzold to possess anti-asthmatic properties, like the preceding, but in a less strong degree. Other observers found it inert. We do not think that any of this is imported now.

3. *Jodina rhombifolia* Hooker et Arnot. Domestic names: *quebracho flojo* ("flexible qu.," so named in the province of Córdoba, Argentine Republic); *sombra del toro* ("bull-guard," in the prov. of Tucuman); *peje* ("fish," in San Luiz, Mendoza, San Juan, and Córdoba); and *quinchilin* or *quinchirin* in Córdoba. Nat. Fam. Ilicineæ. *Hab.* Argentine Republic and Uruguay. Grows to a height of some 24 feet, and up to 1 foot in diameter.

4. *Machœrium fertile* Grisebach (= *M. Tipa* Bentham). Domestic name: *tipa*. Has also been named quebracho, according to some writers, but Prof. Hieronymus, of Córdoba, who has been quoted as the authority for this (see NEW REM., 1880, 111), does not mention this name in his work, "Plantæ Diaphoricæ Floræ Argentinæ," 8vo, Buenos Ayres, 1882. In fact, he says that its wood may be worked with facility. This tree attains a size similar to that of Nos. 1 and 2. Nat. Fam. Leguminosæ. *Hab.* Northern Provinces of Argentine Republic.

The diminutive name *quebrachillo*, or *quebrachilla*, is also applied to such trees or shrubs as *Berberis spinulosa* St. Hil., *Berberis ruscifolia* Lam., *Maytenus ilicifolia* Mart. (the leaves of which are used for adulterating maté), and *Acanthosyris spinescens* Griseb. (*Osyris spinescens* Eichler).

No. 1,702. **Manufacture of Caffeine and Guaranine** (Dr. B. H. McC.).

We see no reason why it should not pay to manufacture caffeine in this country, now that chloroform is made on the large scale by an improved process which does away with the employment of alcohol, and in consequence of which the price of chloroform has fallen to nearly one-half of what it used to be.

Assuming that the identity hitherto believed to exist between caffeine and theine will continue to be recognized in the future, and that it will, therefore, be immaterial whether caffeine is made from coffee and theine from tea-leaves, or vice versa, it is left to the judgment and convenience of the manufacturer to choose either the one or the other crude product.

On page 32 of our last February number, we gave a short process for assaying the quantity of caffeine present, which process is there erroneously attributed to Prof. Hilger as author. It should have been stated that the originator was E. Fricke, and that Prof. Hilger merely reported on the process.

The method of assay there given would probably be found to be too tedious, if expanded into a manufacturing scale. Besides, it has recently been stated (by Dr. C. Rübesamen in the *Chem-techn. Central-Anzeiger*) that it yields a yellow-colored caffeine, contaminated by wax, resin, and other impurities.

In preparing caffeine from coffee, it is not necessary to grind the latter. The crude, green beans are covered with boiling water, about one gallon of the latter being used for each pound of coffee, the mixture allowed to stand twenty-four hours, and the liquid then drawn off. The beans will now be seen to have swelled up, and they may be completely exhausted by a second treatment with about three-quarters of the previous amount of water, draining the liquid off after some twelve hours, and washing the remaining beans with a little more boiling water. The united liquids are treated with solution of acetate of lead, which causes the precipitation of most of the other constituents accompanying the caffeine, the residual clear liquid (together with the washing of the precipitate) neutralized with freshly prepared hydrated oxide of lead, and the filtered or decanted liquid then deprived of lead by hydrosulphuric acid. [Sulphuric acid might be used, but the precipitated sulphate of lead is apt to run through filters. Besides, the free acetic acid remaining in the liquid in either case is objectionable. On a small scale, when trying the above process, we have found it best to precipitate by sulphate of sodium, allowing to deposit by standing and evaporating the decanted and filtered liquid with well-washed animal charcoal to dryness, and extracting with chloroform, by which method a very fair product was obtained. We have also evaporated the original solution still containing lead and the caffeine, without first precipitating the former with sulphate of sodium, but the resulting product was more yellowish. The additional precipitation probably helps to remove some more of the coloring matters still present. Our experiments were not made with a view to decide upon the merits of these particular points, but the above observations were made, *en passant*, while preparing caffeine from coffee (for some special uses) without regard to the quantity of the yield or the economy of the process.]

The liquid, deprived of lead and filtered, is heated to boiling and passed through coarsely powdered, purified animal charcoal, after which it is concentrated and crystallized. The best and most detailed directions for working the process will be found in *Chemische Fabrik* von *Dr. Eduard Stieren*, München, 1865, p. 583.

Guaranine.—If you wish to extract this substance, which is recognized as identical with caffeine, from guarana, you may use the method lately recommended by Bochefontaine and Gosset, in *J. de Pharm. et Ch.:*

Mix 5 parts of finely powdered guarana with 1 part of calcined magnesia, and moisten the mixture with a little water, which will cause it to assume the appearance of a grayish dough, turning reddish after twenty-four hours. Then extract the mass, in a suitable apparatus, three several times with 40 parts of chloroform [or exhaust it with chloroform in a continuous extraction apparatus], and recover the chloroform by distillation. The impure alkaloid thus obtained is dissolved in boiling water, the liquid filtered, and allowed to evaporate over sulphuric acid. By repeating the crystallization several times, very handsome, colorless silky crystals or shining bunches of crystals are thus obtained. 100 parts of guarana yield about 4.5 parts of the pure alkaloid.

Dr. Rübesamen, already mentioned before, gives the following hints by which perfectly colorless caffeine (theine) may be obtained after Mulder's process. The filtrate, separated from the precipitated sulphide of lead, in the process given on page 32 in this JOURNAL, or in the process given above, is evaporated, mixed with *pure* magnesia and perfectly pure quartz sand (previously treated with hydrochloric acid, water, etc.), and then the whole brought to dryness. The dry mass is placed into a triple filter, the inner and outer one being pure washed filtering paper, and the middle one being pure asbestos paper. The filter also rests upon a pad of pure asbestos. The filters with the substance having been placed into a continuous extraction apparatus, chloroform—perfectly colorless and free from water—is used for exhaustion.

The boiling of the chloroform must be conducted very slowly; in fact, this appears to be one of the most important points to be observed, according to the author.

Formulæ Wanted.

WE have inquiries for the composition or mode of preparation of the following:

1. Ely's Cream Balm.
2. McDade's Succus Alterans.
3. Haynes' Arabian Balsam.

If any of our readers can give the desired information, we shall be much obliged.

CORRESPONDENCE.

Ayer's Cherry Pectoral.

EDITOR AMERICAN DRUGGIST:—Several journals have published formulas of Ayer's Cherry Pectoral, but none that I have seen are correct so far. The following will give an identical preparation in appearance, flavor, color, odor, and probably lacks nothing in the original.

℞ Morphiæ Acetatis	grs. iij.
Tr. Sanguinariæ	ʒ ij.
Vini Antimonii,	
Vini Ipecac	ää ʒ iij.
Ext. Pruni Virginianæ Fl.	ʒ iij.
Ol. Amygd. Amar.	♏ iij.
Syrupus Simp., q. s.	ʒ viij.

M.

D. S. WHITE,
Druggist.

FLANDREAU, DAKOTA, March 16th, 1886.

Camphor Balls.—

I.

White vaseline	3 parts.
Paraffin	3 "
Almond oil	1 part.
Camphor	1 "

Melt the fatty ingredients together, add the camphor, and stir until cold.

II.

Martindale's form.—

Spermaceti (cut small)	4 oz.
White wax (cut small)	12 "
Oil of almond	5 "

Melt in a water-bath, and add

Flowers of camphor	4 oz.

Dissolve, and when nearly cold, pour into boxes, or mould in gallipots.—*Chem. and Drugg.*

Modelling Wax.—

Clear wax	200 parts.
Venice turpentine	26 "
Lard	13 "
Precipitated bole	145 "

Mix, and knead the mass in water.—*Chem. and Drugg.*

FORMULAS.

Sachet Perfumes.

1. *Cassie Sachet.*

Cassie flowers, ground	1 lb.
Orris root, powd	1 lb.

2. *Frangipanni Sachet.*

Orris root, powd	3 lbs.
Vetiver, grd	½ lb.
Santal wood, grd	½ lb.
Vanilla, grd	½ lb.
Tonka beans, grd	2 oz.
Oil Neroli	60 ♏
" Santal	40 ♏
" Bergamot	60 ♏
" Geranium, French	60 ♏
" Rose	30 ♏
Extr. Musk	1 oz.
" Civet	½ oz.

3. *Heliotrope Sachet.*

Orris root, powd	2½ lbs.
Rose leaves, grd	1 lb.
Vanilla, grd	6 oz.
Tonka beans, grd	4 oz.
Ext. Musk	1½ oz.
" Civet	½ oz.
Oil bitter Almonds	7 ♏

4. *Lavender Sachet.*

Lavender flowers, grd	2 lbs.
Benzoin, powd	2 oz.
Oil Lavender, French	1 oz.
Ext. Musk	1 oz.

5. *Rose Sachet.*

Orris root, powd	1½ lbs.
Rose leaves, grd	1½ lbs.
Santal wood, grd	4 oz.
Patchouly, grd	2 oz.
Ext. Civet	½ oz.
Oil Geranium, French	30 ♏
" Rose	20 ♏

6. *Jockey Club Sachet.*

Orris root, powd	3 lbs.
Santal wood, grd	½ lb.
Oil Bergamot	1 oz.
" Rose	30 ♏
Ext. Musk	2 oz.
" Civet	1 oz.

7. *Patchouly Sachet.*

Patchouly leaves, grd	2 lbs
Orris root, powd	½ lb.
Oil Patchouly	30 ♏
" Geranium, French	30 ♏

8. *Verbena Sachet.*

Orris root, powd	3 lbs.
Oil Bergamot	120 ♏
" Verbena	180 ♏
" Geranium, French	30 ♏
Ext. Musk	½ oz.

9. *Ylang-ylang Sachet.*

Rose leaves, grd	1 lb.
Cassie flowers, grd	1 lb.
Pimento, grd	¼ lb.
Tonka beans, grd	2 oz.
Vanilla, grd	2 oz.
Orris root, powd	3 lbs.
Oil Pimento	60 ♏
" Bergamot	120 ♏
" Geranium, French	60 ♏
" Ylang-ylang	120 ♏
" Rose	20 ♏
Ext. Musk	1 oz.
" Civet	½ oz.
Benzoin, grd	1 oz.

10. *Violet Sachet.*

Orris root, powd	3 lbs.
Oil Bergamot	30 ♏
" Almonds, bitter	20 ♏
" Rose	20 ♏
Ext. Musk	1 oz.

11. *Rondeletia Sachet.*

Arris root, powd	3 lbs.
Lavender flowers, grd	1½ lbs.
Oil Geranium, French	30 ♏
" Bergamot	120 ♏
" Cloves	120 ♏
" Lavender, Engl	120 ♏
" Rose	20 ♏
Musk pods, grd	1 oz.
Ext. Ambergris	1 oz.
Cloves, grd	½ oz.

12. *New-mown Hay Sachet.*

Orris root, powd	4 lbs.
Tonka beans, grd	½ lb.
Vanilla, grd	½ lb.
Oil Almonds	10 ♏
" Geranium, French	120 ♏
" Rose	30 ♏
" Bergamont	60 ♏
Ext. Musk	1½ oz.

—After *Chem. and Drugg.*, Feb. 15th.

NOTE.—In place of vanilla and tonka beans, the artificially prepared principles vanillin and cumarin may be used. For each ounce of vanilla use 12 grains of vanillin, and for each ounce of Tonka beans, use 10 grains of cumarin. —ED. AM. DRUGG.

Remedy for Corns.

Phosphorus	1 part.
Oil of Sesame	200 parts.
Yellow Wax	30 "

To the oil of sesame, contained in a bottle, add the phosphorus, and heat the bottle in a water-bath until the phosphorus is melted. Agitate the bottle from time to time closing it with a stopper, until the phosphorus is dissolved. Then add the oil to the wax previously melted and partly cooled off. Introduce the mixture, while still fluid, into tubes, close, and label them.

Each of these tubes is packed in a box together with 10 corn-rings or corn-guards.

The application of the remedy is made as follows. One of the perforated corn-guards having been attached to the corn so that the latter occupies the central opening, enough of the corn-remedy is pressed from the tube, to fill the central space. This may be done mornings.

[Here we could suggest to make the corn-guard so that a flap shall be attached to the ring which may be folded over, when the central opening is filled, and thus cover the latter.] In the evening a warm foot-bath should be taken, the softened corn then gently scraped, and a new application made as before. This is repeated mornings and evenings, until the corn has disappeared.

Mr. Adolf Vomacka, who recommends the above preparation in his *Neue Ideen*, also states that good results have been obtained by using the following:

Salicylic Acid	10 parts.
Venice Turpentine	5 "
Acetic Acid, concent	5 "
Collodion	80 "

Antiseptic Mouth-wash.

Oil Peppermint	20 parts.
" Staranise	8 "
" Anise	8 "
" Cinnamon, Ceyl	2 "
" Rose	1 "
" Cloves	4 "
Chloroform	40 "
Tinct. of Ambergris (1 in 5)	4 "
" " Vanilla (1 in 5)	20 "
" " Orris Rt. (1 in 5)	42 "
" " Cedar (1 in 8)	2000 "
"Aseptic" Acid	30 "

The above compound is said to be both very efficient and very pleasant. The "aspetic" acid is a compound consisting of 5 parts of borax, 3 parts of peroxide of hydrogen, and 92 parts of water. It arrests putrefaction and destroys malodorous effluvia. It is said to be specially useful as a mouth-wash in mercurial salivation and atonic ulcers of the gums.—ADOLF VOMACKA in *Neue Ideen.*

Naturæ Novitates. Bibliographie neuer Erscheinungen . . . über Naturgeschichte und exacte Wissenschaften. [Catalogue of new publications of all countries, in all branches of natural history and the exact sciences.] 8vo. Friedländer Sohn. Per year, 4 *marks.*

BIBLIOGRAPHY.

THE CALENDAR OF THE PHARMACEUTICAL SOCIETY OF GREAT BRITAIN. 1886. London. Printed for the Pharm. Soc. of Great Britain. 1886. pp. 519, 8vo. 1/.

THIS book contains the existing laws relating to pharmacy in Great Britain, the by-laws of the Society, list of the members and of duly registered persons engaged in the business, and such laws and general information as is appropriate for a work of this character.

YEAR BOOK OF PHARMACY, with the Transactions of the British Pharmaceutical Conference at the twenty-second annual meeting. London: J. & A. Churchill, 1885, pp. 566, 8vo. 10/ and postage to non members.

THIS annual volume contains an abstract of the pharmaceutical literature of the preceding year, most of which has appeared *in extenso* in the *Pharm. Journ. and Trans.* It is always valuable, and is handsomely published. It might well be included among the desirable works in any pharmaceutical library.

LECTURES ON SYPHILIS. Delivered at the Chicago College of Physicians and Surgeons by G. FRANK LYDSTON, M.D., etc., reported by WM. A. WALKER, A.M., M.D. Chicago: A. M. Wood & Co., 1885, pp. 184.

THIS is a work primarily intended for the information of medical students, and in its present shape is especially adapted for their needs as regards its contents and form. The writer adopts the pathological views of Dr. F. N. Otis, of New York, and dedicates his work to his former instructor, Dr. Jos. W. Howe, of this city. The subject is very clearly and fully considered and the book will doubtles be a valuable aid to the student.

From Eduard Hirschsohn, Mag. Pharm., St. Petersburg.

1. Beitrag zur Chemie der Siam-Benzoë (Contribution to the Chemistry of Siam Benzoë).

2. Ueber das Verhalten der Harze von Pinus silvestris L. and Picea excelsa Lk. gegen Reagentien.

(On the behavior of the resins of P. s. and P. e. towards reagents.)

3. Beitrag zur Kenntniss der Xanthorrhoeaharze.

(Contribution to the knowledge of Xanthorrhœa resins.)

Reprints from *Pharm. Zeitschr. f. Russl.*

NEUE IDEEN. ("Aus der Praxis für die Praxis.") Von ADOLF VOMACKA, Pharm. Mag., Redakteur der "Rundschau," II.

(Continuation of "Unsere Handverkaufsartikel" and "Neue Ideen I.," 16mo, Prag, 1886. Subscription Price, 1 mark.

THIS is a most useful publication from the pen of one of the most advanced pharmacists of the Continent, whose push and enterprise even as a merchant is something quite phenomenal. The little book before us is the second series of practical handbooks containing valuable information for the busy retail pharmacists, and formulas for all kinds of articles he is required to keep in stock. Intending subscribers should address the author at Prag (II. Brenntegasse 13).

Geissler, E., and **Moeller, J.** Real-Encyclopädie der gesammten Pharmacie. [Encyclopædia of Pharmacy, to be published in 5 large volumes, of about 700 pages each, at 15 marks a volume, unbound.] 8vo, Wien.

Hell, G. Pharmaceutisch-technisches Manuale. I. Pharm. Theil. 3te Aufl. 8vo, Troppau. *m.* 8.50.